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Study finds users plan hefty power increases

By John Desmond
CW Staff

FRAMINGHAM, Mass. — Users of large-scale IBM and compatible computers expect to increase their processing power by 30% to 50% during the next three years — a rate that equals or exceeds expectations of users prior to the industry's boom years of 1983 and 1984.

The findings are based on a survey of 1,100 sites, or 6% of the U.S. installed computing base, by International Data Corp., a market research firm here that has been conducting the survey since 1972. The survey addressed users of IBM 370, 4300, 3030 and 3080 series mainframes and compatibles.

According to IDC, 1984 was the first year that personal computer sales revenues surpassed that of mainframes. "The days when mainframe was the market will never return," the study stated. Personal computer penetration at large-scale processor sites will continue at a rapid pace in 1985; IDC projected a 60% increase in the installed microcomputer base this year.

Despite personal computer growth, machines and software based on IBM's 370 architecture — or von Neumann one instruction per cycle processing — account for more sales than any other architecture. Sales of 4300 and 3080 series mainframes in 1984, combined with associated peripherals and software, brought IBM three times the revenues that sales of personal computer products did, the report said.

> **99**
>
> *Micro sales in 1984 surpassed those of mainframes for the first time.*
>
> — International Data Corp.

See IBM page 10

TOP OF THE NEWS

Mini bucks for mini makers. With the exception of Prime, a string of minicomputer vendors' reported plummeting quarterly profits. Page 2.

■

Still a gulf between them. Micro software vendors may think otherwise, but the Micro Managers Association said the rift between itself and the vendors over proposed antipiracy standards remains. Page 8.

■

Bottoms up. Arco Chemical Co. reaped hefty rewards when its DP department began listening carefully to microcomputer end-user complaints. Page 8.

Send in the clones. Televideo, Zenith and Corona each rolled out desktops compatible with IBM's Personal Computer AT. Page 11.

■

Corporate nexus with private-line networks may save up to 20% on existing communications bills using a recently announced AT&T service. Page 53.

■

Twenty years and running. IBM's 1964 vintage 1800 Data Acquisition and Control System still commands a flock of proponents, despite company plans to discontinue support. Page 61.

■

Broker picks fiber optics for bypass

Prudential-Bache turns to T1 channels for data

Third in a four-part series on corporate bypass strategies.

By John Gantz
CW Staff

NEW YORK — Prudential-Bache Securities, Inc. uses a fiber-optic bypass system between two of its buildings here that saves the company 60% to 80% of the cost of standard local facilities while providing advanced data communications capabilities and insulation from rate hikes.

Prudential-Bache, one of the largest worldwide investment firms, last year moved its corporate headquarters from Gold Street in Manhattan to the new Prudential-Bache building a few blocks away on Water Street.

Because the company's data center and some other company assets and personnel remained at the former location, the move created a massive communications need between the two sites, according to Daniel Minoli, associate vice-president of systems planning and engineering with the corporate communications department.

Communications is a cornerstone technology in the financial services industry, and this holds true for Prudential-Bache. The company spends close to $100 million a year on communications — a corporate expense surpassed only by compensation, according to Steven Steinberg, an associate vice-president with corporate communications in

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Digital draft

This year's regular and supplemental NFL pro football draft, featuring the University of Miami's Bernie Kosar, will be aided by a pair of DEC VAXs. Page 15.

Symphony, 1-2-3 get face-lifts

By Rita Sandor
CW Staff

NEW YORK — Lotus Development Corp.'s 1-2-3, the all-time champ of IBM Personal Computer software charts, will get its first major face-lift when an upgraded version is shipped this fall, the company announced here last week. Lotus also introduced a second release of its Symphony desktop productivity program, scheduled for delivery this summer.

The most striking enhancement for both packages is the ability to bypass the IBM micro's 640K-byte limit on directly addressable memory, reaching up to 4M bytes of additional random-access memory under a bank-switching memory management scheme jointly developed with Intel Corp. (see story page 6).

The added memory capability is a response to requests from veteran spreadsheet users who keep hitting the 640K-byte barrier, Lotus Chairman Mitchell Kapor said. He estimated that users who add 2M bytes of RAM will be able to build spreadsheets five to 10 times their present maximum size.

Lotus also introduced Symphony Link, a software add-on product that offers IBM 3270 terminal emulation within the Symphony environment and allows MIS departments to create their own micro-to-mainframe connections, Kapor said.

The announcements are good news for Lotus users, industry analysts generally agreed, although some felt the moves overemphasized Symphony at the expense of the earlier package. "I'm disappointed that [Lotus is] trying to push Symphony first," commented Aaron Goldberg, director of Microsystems Services at International Data Corp. in Santa Clara, Calif. "Most people are still using 1-2-3."

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NEWSPAPER

NEWS

Mini slump deepens: DG profits down, closings planned

By Peter Bartells
CW Staff

Capping off a generally bad week for minicomputer companies, Data General Corp. last week posted lower than expected second-quarter profits and said it will shut down production for two weeks this summer in anticipation of a continued slump.

A few days earlier, Wang Laboratories, Inc. reported that its third quarter was worse than earlier projected, with profits down 66% and revenue growth of only 2%. Last week, Digital Equipment Corp. reported third-quarter profits were down 10% and hinted that fourth-quarter revenue may not meet expectations.

Going against the tide of bad news was the 19% profit increase reported last week by Prime Computer, Inc., which historically has been less dependent on OEM customer sales than DEC and DG.

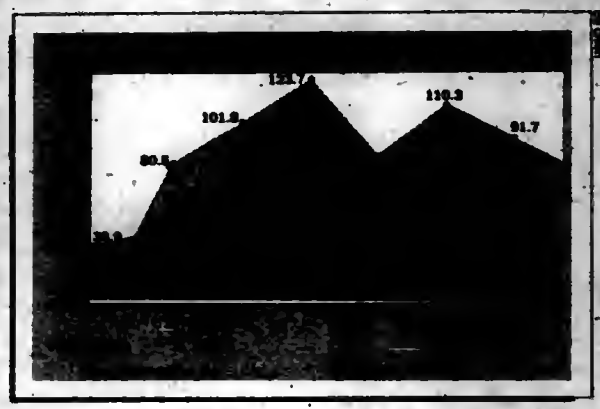
In other developments, Burroughs Corp.'s Memorex Corp. subsidiary announced layoffs, and Control Data Corp. announced a first-quarter loss of $9.2 million.

DG announced in February that second-quarter profits might not exceed year-earlier profits. But the news last week was significantly worse, with profits falling to $9.1 million, or 34 cents per share, down 36% from the second quarter of 1984, when profits were $14.2 million, or 55 cents per share. Revenue in the second quarter increased to $320.2 million, from $273.9 million, but the increase did not offset increased expenses.

Furthermore, DG President Edson D. de Castro said, "Earnings for the [fiscal] year may not exceed those of fiscal 1984, and earnings for the 1985 third quarter may not exceed those of the just-reported second quarter."

He said the company has reduced hiring plans and will shut down U.S. manufacturing operations for two one-week periods coinciding with the Memorial Day and Fourth of July holiday weekends.

Like DG, Wang announced financial results much worse than the company had earlier projected. Wang had earlier announced plans to shut down manufacturing for two weeks. Instead of the 30% to 40% drop it projected last month, Wang's profits dropped 66% to $17 million, or 12 cents per share, from $49.8 million, or 36 cents per share, a year earlier. Revenue inched up to $552.7 million from $543.5 million, short of Wang's earlier 10% growth projection.



DBC posted profits of $91.7 million, or $1.52 per share, down from the third-quarter 1984 profits of $101.8 million, or $1.77 per share. While that was within the range of projections made by securities analysts in recent weeks, it was far below the $125 million projections of about one month ago. DEC said revenue increased to $1.14 billion from $978.9 million a year earlier.

Contributing to DEC's results was the early delivery of 140 VAX 8600s the company said were shipped before the scheduled April 1 date. However, the company noted, it may not be able to ship new products fast enough to meet demand over the next few months, and "this may have a short-term effect on revenues."

In contrast, Prime posted profits of $11.8 million, or 26 cents per share, an increase from the year-earlier profits of $10.2 million, or 21 cents per share. Revenue for the quarter just ended was $175.8 million, up 21% from $145.3 million a year earlier.

Peter Lowber, minicomputer analyst with the Yankee Group in Boston, said the sudden downturn in vendor fortunes was somewhat surprising in light of user surveys indicating relatively strong purchase plans and the need to serve large numbers of personal computers. But he said the trend toward greater MIS involvement in departmental systems planning may be slowing down user purchases.

CDC charged off $11.6 million against profits in anticipation of the likely loss of its Commercial Credit Co.'s deposits in the deposit guarantee fund for Ohio-chartered savings and loans banks.

CDC, which acknowledged but declined to specify the size of "a significant reduction" of the work force in its computer peripherals group, said its information services and products group posted a pretax operating loss of $16.3 million, compared with pretax profits of $16.9 million a year earlier. The $9.2 million loss, or 24 cents per share, compared with profits of $31.7 million, or 82 cents per share, which included a nonoperating gain of $11.8 million. Revenue for the quarter inched up to $1.2 billion, from $1.19 billion a year earlier.

Informatics nixes second bid

WOODLAND HILLS, Calif. — Informatics General Corp. said last week that it had rejected a second cash offer for the company by Sterling Software, Inc., which had raised its original bid by $1 a share.

Following the rejection of the original $25 a share bid [CW, April 22], Sterling's subsequent offer raised the total acquisition value of Informatics to about $135 million, although Sterling already had acquired almost 10% of Informatics' outstanding shares. Informatics rejected the latest offer as inadequate and reiterated its intent to explore other alternatives.

Sterling, which markets some 20 software products for IBM mainframes, last week reported second-quarter profits of $641,000, or 14 cents per share, on revenue of $6 million. A year earlier, it posted profits of $340,000, or 8 cents per share, on revenue of $4.8 million.

Informatics offers a diverse product line of software and services and reported revenue of $193 million in 1984. Profits for the year were $4.7 million, down from $8.5 million in 1983.

CORRECTIONS

The Series II+ Twinax Protocol Converter recently announced by KMW Systems Inc. of Austin, Texas, emulates a 5251 Model II, not a 5250 Model II as was reported [CW, April 8].

The contact for seminars attributed to Technology Solutions, Inc. [CW, April 22] is On-Line Software International, Fort Lee Executive Park, 2 Executive Drive, Fort Lee, N.J. 07024.

Starting wages for data processing personnel in Hawaii are 15% lower than the national average, not 15% higher than the national average as reported in the article "DP salaries up 5.9%, study reports" [CW, March 4].

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SUSPENSE

How did IBM's rookie sort (Rel 7.0) do in its first meeting with "Lefty" SyncSort? Read all about it!

or Call (201) 568-9700.

Get the inside scouting report.

It is one of those historic moments in the Annals of Sort! The very first appearance in competition of IBM's new DFSORT, Release 7, in the tough-as-nails MVS/XA League. Will the kid be able to live up to his advance press notices?

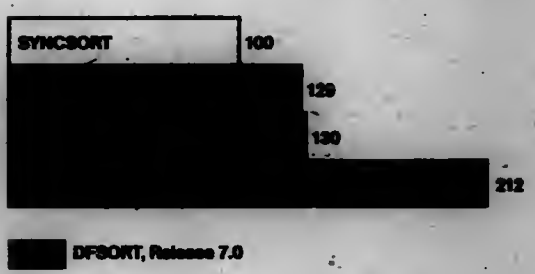
Confidently DFSORT7 strides to the plate... knocks the dirt out of his spikes... hitches up his britches... raises his sort assists.

Then, as sorting fans everywhere gasp in amazement, he lifts his arm lazily and points toward the centerfield flagpole, thousands of bytes away. The kid is going to try to emulate Babe's mighty homerun shot!

Moments later, SyncSort winds up... a curving white blur is seen... and... and...

There is no joy in Armonk! DFSORT7 struck out every time it came to bat against the latest release of SyncSort (Release 2.SE) in a recent series of MVS benchmark tests. (In sorting, as in most other forms of human endeavor, it's a long way from *baby* to *Babe*.)

The bar charts below tell the story more eloquently than we can:



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BYPASS from page 1

charge of the financial analysis group. Much of that money is spent supporting Prudential-Bache's 300 branch offices with voice, data and value-added communications services, such as the Dow Jones News & Retrieval Service.

Prudential-Bache's trader and operation divisions are even more dependent on communications than the branch offices. With the move to Water Street, the company anticipated traffic between the buildings that included intracompany voice communications and data flowing between the host information processing systems — which include IBM 3084 Models Z and X duplex, an IBM 3081 Model K, an IBM 3083 Model MP and an IBM 4381 Model II — and a large population of users in headquarters.

Although microwave and infrared bypass technologies were considered as means to connect the two buildings, a housing complex sitting between the locations made their use impractical, Minoli said.

Aware of the situation, New York Telephone Co. offered to link Prudential-Bache's buildings with a fiber-optic bypass network that would be made available on a 60-month lease. "Telephone companies are going that way," Minoli said. "They are saying, 'If you want to go bypass, go bypass, but come with us. We'll give you the state of the art, the digital feature, the noise resilience, the good bit error-rate statistics, diverseification, constant monitoring and dual fallback positions.' "

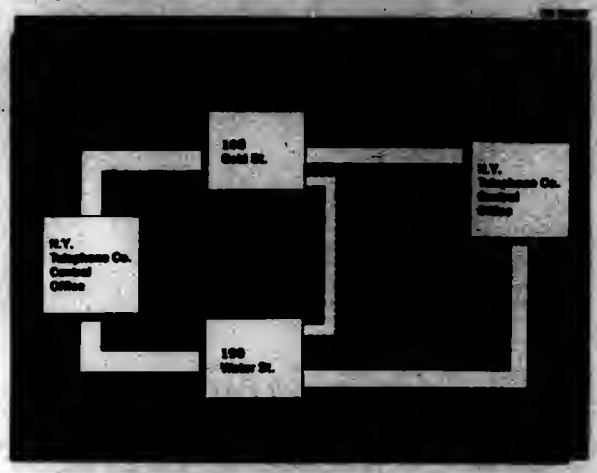
Six months to complete system

Six months after the project was conceived, designed and approved, the system was complete, Minoli said.

Today, primary and backup fiber-optic cables run between the Gold Street and Water Street complexes through different New York Telephone switch offices, ensuring service even in the event of a switching office failure. For reasons of physical security, the cables enter the respective Prudential-Bache buildings on opposite sides.

The fiber-optic cable has a total capacity of 45M bit/sec., but today the company only uses 12 1.54M bit/sec. T1 links, Minoli said. Other strands of fiber can be brought up by adding terminating equipment.

Because it was initially uncertain how the fiber-optic system would perform, Prudential-Bache contracted Manhattan Cable TV to install



three additional T1 links as the system was being installed. These services are provided over tried-and-true CATV coaxial cable facilities and give Prudential-Bache alternate communications routes that further safeguard availability.

Of the 12 T1 links now used, roughly nine carry voice traffic, and three carry data. Voice traffic at headquarters is supported by a Northern Telecom, Inc. SL-1 private branch exchange; the Gold Street facility uses Centrex service provided by New York Telephone. Intracompany voice traffic is provided between the buildings by tying the Water Street SL-1 to a switching module dedicated to the task at Gold Street. The PBX and switching module — which directly interface with the digital bypass links — partition the T1 trunks into 24 64K bit/sec. telephony standard channels.

For data communications over the fiber-optic network, Prudential-Bache terminates the bypass trunks with channel banks from Rockwell International Corp. that divide the T1 capacity into 24 circuits similar to analog leased lines.

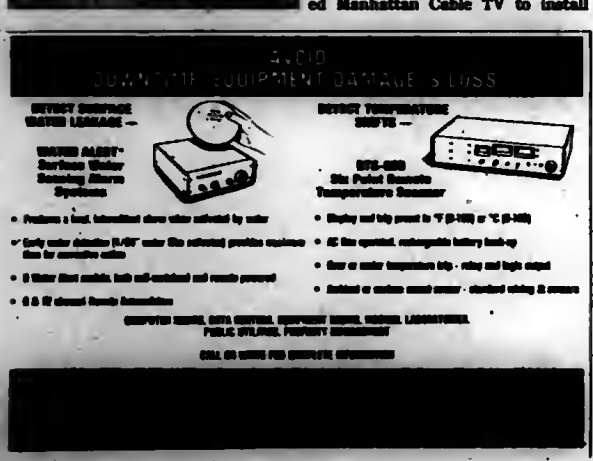
The Manhattan Cable TV bypass link used for data communications (the other two are used for voice) is terminated using multiplexer equipment from Datatel, Inc. of Cherry Hill, N.J. This hardware derives 96 9.6K bit/sec. channels out of the 1.54M bit/sec. T1 link. Minoli said T1 multiplexers provide the most cost-effective use of the T1 facilities and that the company is considering using them with the fiber plant as well.

When the cost of the fiber-optic and coaxial transport systems is compared with the New York Telephone leased-line services that otherwise would have been needed, savings range from 60% to 80%, Minoli said. Copper leased facilities for the application would have cost roughly $100/circuit/mo. The T1 bypass systems cost roughly $40 per equivalent channel per month — including lease of the facilities and amortized equipment costs — and as little as $17/channel/mo when T1 multiplexers are used, Minoli said.

But immediate savings are not the only benefit of the system; equally important are advanced data communications capabilities and protection from rate hikes (see related story left). Minoli anticipates that most future rate hikes will concern the local loop. "Having put the local loops on fiber [under a 60-month lease], I believe that we will be insulated from local rate hikes."

Although leasing the facilities means Prudential-Bache must carry a yearly recurring charge, it has enabled the company to sidestep the high initial cost of installing its own system and puts the onus on New York Telephone to maintain reliability.

"Because of divestiture and the dynamic nature of the industry, you are actually able to cut costs while increasing functionality if you do it right," Minoli concluded.



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Adapso, MMA remain at odds over antipiracy issue

By Kathleen Burton
CW West Coast Bureau

SAN FRANCISCO — Contrary to claims made last week by members of a software vendors association, the conflict between the association and a corporate microcomputer users group over antipiracy proposals continues unabated.

At a meeting here, members of the Association of Data Processing Service Organization's (Adapso) software protection committee said there has been an easing of tensions between it and the Microcomputer Managers Association (MMA).

But the New York-based MMA, which claims to have spent more than $100 million on micro software last year, disagreed, labeling Adapso's antipiracy efforts largely a "waste of time."

'Costly inconvenience'

In March, the MMA voted to oppose the software copy protection proposals announced earlier by Adapso [CW, March 11], spearheading user concerns that the proposals would be, according to one MMA member, "legislated and costly inconvenience."

Speaking at an Adapso software protection committee meeting held here recently, Ron Palenski, associate general counsel with Adapso, said that following telephone discussions with Adapso committee members in March, only some relatively minor technical concerns — such as keeping track of software keys on a hardware "key ring" protection device — stood in the way of declaring a philosophical cease-fire between the MMA and Adapso.

The MMA's major concern — that the adoption of protection standards by users would be legislated — was laid to rest during these discussions, Palenski claimed. "The MMA now knows we can't recommend marketing methods to them because of antitrust considerations."

'We're hoping they'll attend'

Palenski also said that Adapso had invited the MMA to a standards review meeting at Adapso this week, and "we're hoping they'll attend."

But MMA President Alan Gross, when reached in New York, said, "There has been absolutely no softening with Adapso on our part." Gross said Adapso was "merely going through the futile exercise" of creating standards that would "never be implemented by large-scale users."

According to Gross, "Adapso is just wasting their time." If the implementation of standards were forced, he explained, large-scale users would vote against them with their purchasing dollars.

Wanted involvement at the beginning

Gross said his organization did not attend last week's Adapso technical review meeting to discuss the proposed standards because "we wanted to be involved at the beginning, not at the middle." The MMA might attend future meetings, however, he added.

"At times we'd like to treat some of these user group issues lightly and keep them at their highest level of abstraction," said Mitchell Kapor, president of Lotus Development Corp., who spoke at the Adapso conference. But, Kapor explained, since user groups represent a significant portion of the community, "we have to get involved."

"Adapso is not stonewalling the MMA or any other users group," Kapor insisted. The committee is very concerned about what users say, but it has no plans to refocus its copyright protection strategy to achieve a rapprochement with MMA or any other disenfranchised users, he said.

> **"[Adapso is] merely going through the futile exercise."**
> — Alan Gross
> MMA Managers Association

Adapso has given MMA many chances for input into Adapso's decision-making process, he added, including invitations to discuss issues with Adapso executives and to join Adapso's committee and technical evaluation groups, but so far, "the MMA has chosen not to become directly involved."

Kapor said he did not think Adapso's aggressive strategy had backfired by alienating the MMA. "If anything, it's speeded up constructive dialogue between our two groups and opened volatile issues to get on the table more quickly," he said.

Dan Fylstra, an Adapso committee member and president of Customer Solutions, Inc., a software consulting firm in Palo Alto, Calif., said that disgruntled MMA members should attend Adapso meetings to understand that technical protection is merely a small part of Adapso's overall educational and legislative goals.

Fylstra said a recent Adapso mailing of 120,000 issue-oriented brochures to corporate decision makers across the U.S. has yielded 5,000 positive responses since January, "so the committee is really juking the MMA reaction in its stride."

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Intel boards push IBM micro memory over 640K

By Kathleen Sullivan
CW West Coast Bureau

HILLSBORO, Ore. — Anticipating the release of memory-intensive applications programs and operating environments, Intel Corp. last week announced a set of circuit boards designed to expand the memory of the IBM Personal Computer family beyond its current 640K-byte memory capacity.

With Intel's Above Board memory boards, an IBM Personal Computer's memory can be expanded to up to 8M bytes, the firm said.

Rich Bader, comanager of the Intel operation that developed the add-on boards, said Above Board uses a new implementation of bank-switched memory architecture in order to provide access to the expanded memory.

Expanded Memory Manager

The boards are said to include Intel's Expanded Memory Manager (EMM) software, which is a DOS driver.

EMM supervises the expanded memory and allows programs such as a random-access memory disk and print spooler to concurrently share the expanded memory with applications programs, the vendor company said.

Existing software packages will not be able to take advantage of Above Board's expanded memory without modification, Bader said.

Two lines introduced

Intel announced two product lines: the Above Board/PC, designed for IBM's Personal Computer and Personal Computer XT, and Above Board/AT for the Personal Computer AT, which the firm said it will offer with a Piggyback Memory board.

In the Above Board/PC line, Intel will offer a 64K-byte board, which can be expanded to 512K bytes, and a 256K-byte board, which can be expanded up to 2M bytes.

Above Board/AT memory boards will include a 128K-byte board, which can be expanded to 512K bytes, and a 512K-byte board, which can be expanded up to 2M bytes.

The Above Board/PC with 64K bytes of memory costs $395; the 256K-byte version costs $595, the company said. The Above Board/AT with 128K bytes of memory costs $595; the 512K-byte version costs $995. An Above Board/AT Piggyback Memory board with 128K bytes of memory costs $295, and a 512K-byte version costs $795, the company said.

More information can be obtained from Intel, 5200 N.E. Elam Young Pkwy., Mail Stop TOC-03, Hillsboro, Ore. 97124.

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LOTUS from page 1

In addition to the boosted memory capability, which requires add-on boards designed to the new specification, both programs will feature a more efficient memory allocation scheme, Kapor said. They also will support Intel 8087 and 80287 numeric coprocessors.

The revamped 1-2-3's spreadsheet will be compatible with the new Symphony spreadsheet, except for differences in macros and some command-level functions, Kapor said.

Priced at $495, the enhanced 1-2-3 reportedly will feature additional macros, the ability to access MS-DOS without exiting the application, regression analysis and other functions. File translation to and from the current version of 1-2-3 also will be provided.

Customers who purchased 1-2-3 after April 24 will be eligible for a free upgrade, but details of upgrades for current users were not disclosed. The enhanced release will require more than 192K bytes of memory.

Symphony enhancements

Among other enhancements offered by Release 1.1 of Symphony, a Macro Library Manager reportedly will permit users to store macros, numbers, labels and named ranges outside the work sheet.

Available for $695, Release 1.1 also includes a file translation facility for moving Symphony files to 1-2-3. Additionally, the installation, documentation and tutorial reportedly have been redesigned to make Symphony easier to learn.

Release 1.1 of Symphony requires 384K bytes of internal memory and runs on the IBM Personal Computer line, Compaq Computer Corp. systems and the AT&T Model 6300 Personal Computer. Upgrades for current Symphony owners will cost $75.

While Lotus did not announce versions for specific local-area network products, the packages "will provide support for [MS-DOS] 3.1 networks in the form of remote file access and support for printing devices attached to the network," Kapor said.

Micro-mainframe package

Symphony Link, which Lotus President James Manzi called "the backbone of our entire 3270 environment strategy," is a micro-to-mainframe package designed for use with Digital Communications Associates, Inc.'s Irma board.

Priced at $395, the add-on software reportedly provides IBM 3278 Model 2 emulation within the Symphony environment, complete with menus and Help screens. It also gives "the ability to directly capture mainframe screen information into a work sheet," Kapor said.

Symphony Link runs on an IBM Personal Computer, Personal Computer XT or AT with 512K bytes of internal memory.

None of the software was demonstrated at the announcement.

Lotus is headquartered at 55 Cambridge Pkwy., Cambridge, Mass. 02142.

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Arco MIS finds hidden bonus in end-user computing

Chemical firm gets fresh viewpoint on 'dirty' data

By John Desmond
CW Staff

PHILADELPHIA — Soon after Arco Chemical Co. gave its end users access to production data in 1983, an Arco financial reporting manager tried to call maintenance expense data from nationwide Arco plants to his screen.

But John Faulhaber found the data was unavailable, and he wanted to know why. From the inquiry of this management end-user with no previous computer experience, Arco's information center manager Carl Weber learned something about his production data. "Faulhaber began to see problems deep down in the data that were always there, but we never knew it," Weber said.

Consultants said this fresh viewpoint on old and sometimes "dirty" production data is an unexpected benefit of end-user computing.

One consultant said that when end users begin gaining access to production data, DP professionals become motivated to police that data. "User departments are in a position to look at the data and say there is a problem," said Nancy Kutvila, end-user support manager for the Computer Task Group, Inc., a Buffalo, N.Y.-based systems development consulting firm.

According to Kenneth G. Rau, a partner in the Woburn, Mass.-based Winchester Consulting Group, as end-user computing grows, "the analyst types, as opposed to the technicians, will be able to get their hands on the data and make changes."

Larry DeDeuver, president of Linkware Corp. of Waltham, Mass., a micro-mainframe link vendor, seconded the notion that end-user computing promotes cleaner mainframe data. "You're seeing the first seeds of a trend that will grow over time. This will almost force the opening of a dialogue between the end user and the DP manager," he said.

Kutvila

That dialogue took place at Arco, where Faulhaber and Weber said they arrived at a solution together. Arco uses Information Builders, Inc.'s Focus retrieval tool to make its IBM IMS data base easier for users to access. Arco has nearly 100 end users accessing data from IBM 3081 and 3033 mainframes.

Faulhaber was using Focus to view production data when he made his observation. "Focus enabled Faulhaber to shift his perspective and to take more of a top-level view of the company operations," Weber said. "When he tried to do so, the data was not well structured for that purpose."

Weber said that since the beginning of DP at Arco, the data had been inconsistently structured across Cobol applications, so that each plan listed maintenance expenses in different accounts. The only way to compare plant expenses directly was to write a program to do so — an impractical job. Since Faulhaber made his suggestion, the giant chemical company has changed the structure of data in its dispersed and inconsistent applications so that Faulhaber's query and others like it can be answered.

Both Arco managers said the impact on the company has been extensive. Arco has used the data in applications and analyses to reduce expenses, to cut time-shared processing needs and to improve its mix of clients and products in the marketing area. Weber estimated that the applications have generated tens of millions of dollars in income and cost reductions for Arco. "It all adds up," he said.

By querying the data base to analyze products sold, Arco sales managers can now cut sales efforts on less profitable products and concentrate on those with greater profit margins. Arco now offers discounts based on sales volume to distributors, which obtain a list of customers by size from the data base. Such applications were never tried before because the programming costs could not be justified, and users would have to wait too long for the applications, according to Weber.

Micro links result in mainframe applications enhancements

Since being linked to mainframe data bases with micro-mainframe software, end users at two firms have enhanced mainframe applications with the help of information center professionals.

Fidelity Systems Co., a Boston investment firm, uses Linkware Corp. software to link micro users to an IBM 3033 under VM/CMS. Frank Diasparra, vice-president of systems engineering, and his staff are responsible for overseeing nearly two million shareholder activity accounts. Funds managers must be able to move money from account to account on a real-time basis and track money invested in a variety of accounts, so Diasparra's unit needed access to production data.

Fidelity copies a controlled extract of its production data into a service processor. Users on the micro-mainframe link access the controlled extract rather than live production data. Data is downloaded to IBM Personal Computers running Lotus Development Corp.'s 1-2-3 spreadsheet software to produce graphs and reports. The micro-mainframe link cut the time needed to produce the reports from hours to minutes, Diasparra said.

"The good news was that the users found a way to build effective reporting tools using the personal computers," Diasparra said. But the users soon found they needed new reporting requirements. "They saw the power of the product, and the focus immediately shifted to getting the reports out more quickly."

Working with the information center staff, the users devised more sophisticated Lotus spreadsheet reports, such as cash projections by type of fund. Diasparra said applications are continually revised as users work with the DP professionals.

> **"The good news was that the users found a way to build effective reporting tools using the personal computers,"**
>
> — Frank Diasparra
> Fidelity Systems Co.

End users reaped similar benefits at Philadelphia Life Insurance Co., where information center end users have IBM Personal Computers emulating 3270 terminals linked to the company's IBM 3083 mainframe.

Information center analyst Tom Peterson said that whenever any agent needed mailing labels, the data center would run a batch program to print labels for every agent.

Users came up with the idea of downloading data to micros and printing labels only as needed in a specific state or region. Peterson projects a $40,000 annual savings from the suggestion.

— John Desmond

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JOHN CULLINANE

On the Information Center Strategy

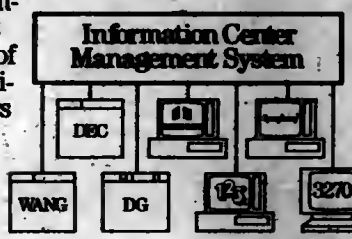
Today, virtually every IBM mainframe user is attempting to implement an information center. Formulating a successful information system strategy for the 80's and 90's requires it.

However, one of the major problems many companies face is the variety of software and databases located on different mainframes, departmental minis and personal computers. The challenge is to create an environment that integrates this diversity, is

"Open system architecture is key in implementing an information center strategy."

responsive to the corporate user community in meeting its information needs and, most importantly, provides access that is consistent and transparent. This is why open system architecture is key in implementing an information center strategy.

It also makes particular sense for a software company like Cullinet to adopt a policy of open system architecture that allows corporations to standardize on Cullinet's products without losing a significant investment in other vendors' products—whether they are mainframe applications, microcomputer software such as Lotus 1-2-3, Symphony and other PC products or departmental minis from companies like Digital, Data General, Wang, Hewlett-Packard and others.



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For more information about the Information Center Management System and the full range of Cullinet products, I encourage you to phone, toll-free, 1-800-225-9930. In Massachusetts, the number is 617-329-7700.

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NEWS

IDC from page 1

The survey also reported the following:

■ Large system users are growing faster. Some 19% of 3080 series sites are expected to increase processing power more than 50% per year.

■ The installed base of personal computers at the large-scale processor sites is expected to increase some 60% in 1985.

■ Forty-eight percent of respondents indicated that personal computers will be responsible for increased demand for mainframe power; 39% said the micros will have no effect.

■ Megabytes of installed disk storage will increase 30% in 1985.

■ Users continue to embrace IBM's Systems Network Architecture (SNA) across all CPU sizes in 1984. Some 40% of all 370 architecture sites now support SNA; for 3080-class sites, SNA penetration is 80%.

Larger system users are more likely to be SNA users, the survey found. SNA is used by 60% of 3081 and 3084 users and by 21.1% of 4361 users.

■ Optical storage is up and coming, the survey found. The use of optical storage by 3081 and 3084 users is planned to increase by 22% for new applications.

■ The installed base of 3084 mainframes, first shipped in 1983, will more than double — from 210 in 1984 to 550 in 1985, according to IDC.

IDC projected that from 1984 to 1985, 3081 installations will grow from 1,700 to 1,990; 3083 installations will increase from 1,850 to 2,070; and 3090 installations will reach 200 in the system's first year of scheduled shipping.

The survey showed IBM's MVS/XA strategic operating system is used by 62% of 3084 users, 45.6% of 3081 users and 23.4% of 3083 users.

Increase in upgrades

A strong year for field upgrades was projected by IDC. In the 3083 family, 26.8% of users plan to upgrade in 1985, compared with 24.4% in 1984.

An upgrade from a 3083 to a 3081 is planned by 13.9% of users in 1985, up from 5.6% in 1984. An upgrade from a 3081 to a 3084 is planned by 17.3% of those surveyed, compared with 16.8% in 1984.

The largest percentage of users with plans to increase on-line storage capacity were 3081 and 3084 users. Of those, 46% plan to increase capacity up to 50% over three years. The same mainframe users plan to increase reels in their tape libraries by 50% over three years.

The migration path for disk drives is toward the IBM 3380 and away from the 3330. IDC found a 41% decrease in 3330 installations and a 56% increase in 3380 installations. (The survey predated IBM's announcement of the double-density 3380 drive.) In 1985, IDC projected installations of 12,529 3380 spindles, 9,238 3350 spindles and 1,207 3330 spindles.

Fewer personal computers are stand-alone units, according to the survey. The number of installed personal computers is projected to increase from 30,600 in 1984 to 48,575 in 1985. But the number of installed stand-alone personal computers was projected to decrease from 78% in 1984 to 63% in 1985. Few terminals are dedicated to a single application, and few make use of color or graphics, according to the study. The primary terminal applications reported were inquiry/response, 36.7%, and data entry, 31.7%.

Models	Less than 10%	10% to 20%	20% to 50%	50%+	No response
4300 class	21.5%	46.8%	23.8%	6.3%	3.7%
3081, 3084 class	10.3%	38.3%	35.0%	8.5%	7.4%

Migration to larger system down

In the 1983 migration survey, IDC found that 22% of users planned to migrate to a larger machine, whereas 28% had such plans in 1981. The current survey shows that 26% of sites will be adding or replacing processors in 1985.

The large-scale systems market grew at an 8.1% rate in 1984, according to IDC. IDC projected a 4% to 5% growth rate in 1985 and a rebound year in 1986 with an 11% to 15% growth.

Describing the contrast between the survey's optimistic outlook and the current industry downturn, an IDC spokesman said, "The reason the mainframe manufacturers are slow is because they're between product cycles, not because there is no demand." A number of new mainframes have been announced in the past several months but have yet to be shipped by their companies, the spokesman noted.

"1985 IBM Migration Survey and Large-Scale Systems Market Data," is available for $795 from IDC, which is located at Five Speen St., Framingham, Mass. 01701.

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NEWS

Corona, Televideo, Zenith unwrap IBM AT compatibles

By Edward Warner
CW Staff

The number of IBM Personal Computer AT compatibles doubled last week with announcements by Corona Data Systems, Inc., Zenith Data Systems and Televideo Systems, Inc. of personal computers using the Intel Corp. 80286 microprocessor, the high-speed heart of the AT.

The 80286 chip used in the Televideo AT, however, reportedly operates at 8 MHz, a full 2 MHz faster than the speed of the 80286 chip in the Personal Computer AT and the AT compatibles from Zenith and Corona. A switch in the Televideo AT slows the 80286 chip to 6 MHz to run timing-dependent Personal Computer AT software.

Zenith's Z-200 is said to incorporate "no wait-states" technology, eliminating what John P. Frank, Zenith's marketing vice-president, said were the processing delays built into the Personal Computer AT.

Corona's machine is a 38-lb unit that the company said is the first AT-compatible transportable. The Corona AT Transportable comes with a built-in, 9-in., green-screen monochrome monitor and a color/monochrome video graphics card that reportedly allows it to support an optional color monitor.

Like IBM's Personal Computer AT, the machines reportedly will be offered in standard and enhanced editions, the latter models with 20M-byte hard disks.

Corona's standard machine, the ATP-6-QD, is said to offer one 1.2M-byte drive, one 360K-byte drive, 512K bytes of memory and a price of $4,500. The enhanced version, the ATP-6-Q20, comes with 512K bytes of memory, one 1.2M-byte drive and a $5,500 price tag. Deliveries for both will begin in July.

Corona Data Systems is located at 31324 Via Colinas, Westlake Village, Calif. 91361.

The standard Zenith Z-200, priced at $3,999, reportedly comes with 512K bytes of random-access memory (RAM), expandable to 16M bytes, one 1.2M-byte diskette drive, six AT-compatible expansion slots and Microsoft Corp.'s MS-DOS 3.1. An enhanced version is offered for $5,590.

Zenith Data Systems is located at 1000 Milwaukee Ave., Glenview, Ill. 60025.

The Televideo AT, priced at $3,400 in its standard version, is offered with 256K bytes of memory, a 1.2M-byte diskette drive, a clock/calendar with battery backup, an RS-232 serial port, a parallel printer port and eight bus expansion slots. The enhanced version, priced at $4,995, reportedly comes with 512K bytes of memory. Both machines will ship in July, Televideo said.

Televideo Systems is located at 1170 Morse Ave., Sunnyvale, Calif. 94086.

Televideo claimed another performance advantage over the Personal Computer AT in its use of a special disk controller in the enhanced Televideo AT. That controller has twin buffers that reportedly permit it to read data from one disk track in one pass.

The 20M-byte hard disk in the enhanced version of the Zenith Z-200 reportedly has a 40-msec access time, which is the same as that of the Personal Computer AT.

> ***"The Personal Computer AT's processing delays occur because its microprocessor operates faster than its custom 256K-bit RAM chips."***

Zenith's Frank said that the Personal Computer AT's processing delays occur because its microprocessor operates faster than its custom 256K-bit RAM chips. The Zenith machine, he said, uses 256K-bit "fast chips," eliminating the problem and allowing the Z-200 to expand memory in 1.5M-byte blocks. "To get 3M bytes [of RAM], IBM would have to use all of its AT slots," he claimed, adding that the Z-200 can reach 3M bytes with two slots to spare.

All of the AT-compatibles claim to use keyboards offering design advantages over the keyboard of the Personal Computer AT. The Corona machine's keyboard is said to include number and cap lock keys and an interface to the IBM Personal Computer XT. Televideo has placed LEDs directly on the scroll, caps and numeric lock keys, rather than using the Personal Computer AT strategy of placing the LEDs on the keyboard case itself. The frequently used keys of the Z-200's keyboard, meanwhile, have reportedly been enlarged to avoid data entry errors.

All three of the AT-compatibles reportedly will be shown at the Comdex '85 show next month in Atlanta. Personal Computers claiming AT compatibility have already been introduced by ITT, Kaypro Corp. and Texas Instruments, Inc.

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Cincom offers Mantis for DEC's VAX, enhances TIS

CW AT INTERACT '85

By Maura McEnaney
CW Staff

CINCINNATI — In a move confirming its belief in the growing importance of departmental systems, Cincom Systems, Inc. last week announced that its Mantis fourth-generation language-based applications development system now runs on Digital Equipment Corp.'s VAX systems.

Cincom also announced an enhanced version of its TIS, including its relational data base management system, that makes the product available to IBM DOS users for the first time.

The announcements were made at Interact '85, Cincom's annual users group meeting at the Hyatt Regency Hotel here.

Formerly available for IBM OS, DOS and CMS environments and Wang Laboratories, Inc.'s VS operating system, Mantis, now out for the VAX, is fully integrated with Cincom's Ultra Interactive DBMS for the VAX environment, according to a Cincom spokesman said.

The DEC version of Mantis incorporates all of the features of Mantis' IBM and Wang versions, including an interactive program development module that allows users to design prototypes, screens, prompts, files, interfaces and programs.

It supports dynamic Mantis files, DEC's RMS files and Cincom's Ultra files. All files can be accessed by Mantis using the same verb commands found in Mantis' data manipulation language.

Mantis for the VAX includes a VAX/VMS full screen editor that allows users to program the Mantis line editor or the VAX editor. Users can access the VAX editor from a programming mode, the spokesman said.

The product also includes a migration utility that lets users move Mantis entities between IBM and VAX environments. The utility performs necessary Ascii and Ebcdic translations, numeric conversions, selected code conversions and record format conversions, the vendor said.

Mantis can be purchased as a stand-alone product or in conjunction with Cincom's Ultra. Pricing is based on configuration and ranges from $16,000 for Mantis on the VAX-11/730 to $80,000 for Mantis and Ultra on the VAX 8600.

Cincom announced that Release 2.0 of TIS data base products, including its relational DBMS, now supports IBM's DOS environment.

Formerly available for IBM MVS, MVS/XA and VS1 operating systems, TIS 2.0 consists of Cincom's Logical User View (LUV), which is said to insulate programmers and end users from physical changes in the DBMS. It includes the In-Line Directory containing information about data base descriptions, data sets, user and logical views; the TIS Relational Data Base Manager; TIS Relational Data Manipulation Language; and the TIS Intelligent Query facility. TIS 2.0 also incorporates Cincom's Mantis fourth-generation language.

Other enhancements to the product include concurrent update protection at the record level and new space management facilities. DBMS enhancements allow users to access standard Vsam files using other Cincom applications tools without having to reload data to data base files, the vendor said.

TIS 2.0 is priced between $150,000 and $200,000, depending on options and configurations.

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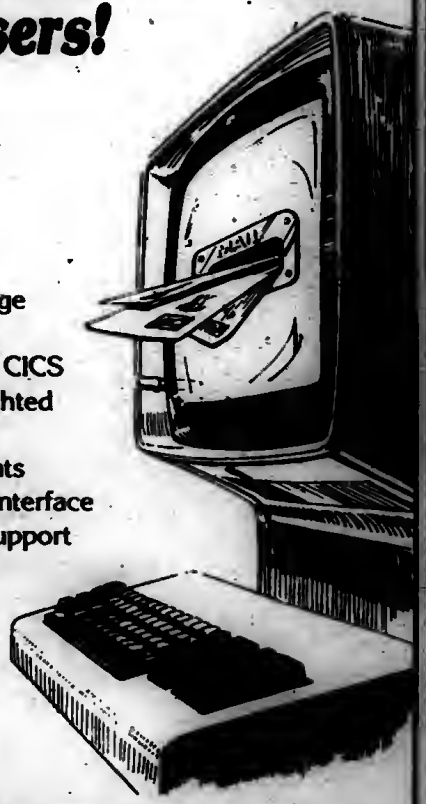

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IBM admits using outdated repair data

By Clinton Wilder
CW Staff

ROANOKE, Va. — In court documents filed here, IBM admitted it used outdated inventory information on repair parts when servicing customers in the South until early 1980. IBM, however, refused to say that the erroneous information resulted in overcharges to its customers.

The admission was included in the company's response to a $600,000 lawsuit filed by a former IBM employee in February in U.S. District Court here. Bobby L. Buck, formerly an IBM customer engineer based in Mobile, Ala., has alleged that IBM adopted his solution to the inventory time-lag problem without crediting or rewarding him.

Buck claimed that IBM's parts locator system at its regional District 6 office in Atlanta ran two to four weeks behind in listing inventories at the district's branch offices. Customer engineers from the branch offices allegedly had to rely on the outdated information in Atlanta to request parts availability for after-hours and weekend service calls.

Buck said most of the allegedly unnecessary cost of shipping parts not tracked by the parts locator was borne by IBM because of the terms of maintenance contracts. Customers without those contracts, however, had to bear the added expense of shipping the part by air from Atlanta, according to Buck's attorneys.

Responding to the allegations, IBM attorney G. H. Gromel Jr. wrote, "IBM admits that prior to sometime in February 1980, its parts locator used by the Atlanta Dispatch Center would be outdated to some degree almost from the time it was prepared."

Gromel wrote that IBM "is without sufficient knowledge or information to form an opinion" on Buck's allegation that shipping costs were passed on to some IBM customers.

Wang unveils gateways to IBM office, net products

BRUSSELS — Wang Laboratories, Inc. opened the floodgates last week with the introduction of nine communications products, the most important of which enables documents to be passed between and revised on Wang and IBM systems.

Announced at its executive briefing center in Brussels, the products include the Wang Office/Disoss Gateway, Wang VS Profs Gateway, Wang VS/SNA Gateway, PC SNA 3270 Network, Distributed Management Facility, X.25 General Access Interface, X.3 PAD Emulation Facility, Network Applications Interface and Wangnet Shared Interconnect Modem Service.

The Wang Office/Disoss Gateway reportedly enables editable documents to be passed between Wang and IBM systems with the IBM Distributed Office Support System (Disoss).

Wang gateway

The gateway — which wraps IBM's Document Interchange Architecture protocol around the information to be exchanged — is said to enable users to file, search and retrieve Wang documents in a Disoss library. Access to the function is provided through a menu option on the Wang Office main menu, the company reported.

Available in the first quarter of 1986, the Wang VS and IBM host software components each cost $3,000.

Wang's VS Profs Gateway is said to be an optional feature of the Wang Office, providing VS users with direct access to document libraries within IBM's Professional Office System (Profs).

Document exchange

The gateway performs a number of document exchange functions, including transmitting VS documents to and from specific IBM Profs users and cross-referencing word processing document numbers with Profs document numbers, Wang reported. Additionally, the gateway enables users to determine the status of document processing to maintain user profile records.

The IBM host software for Profs Gateway has a $40,000 license fee, and the VS software costs $2,000. Both are scheduled to be available in the fourth quarter.

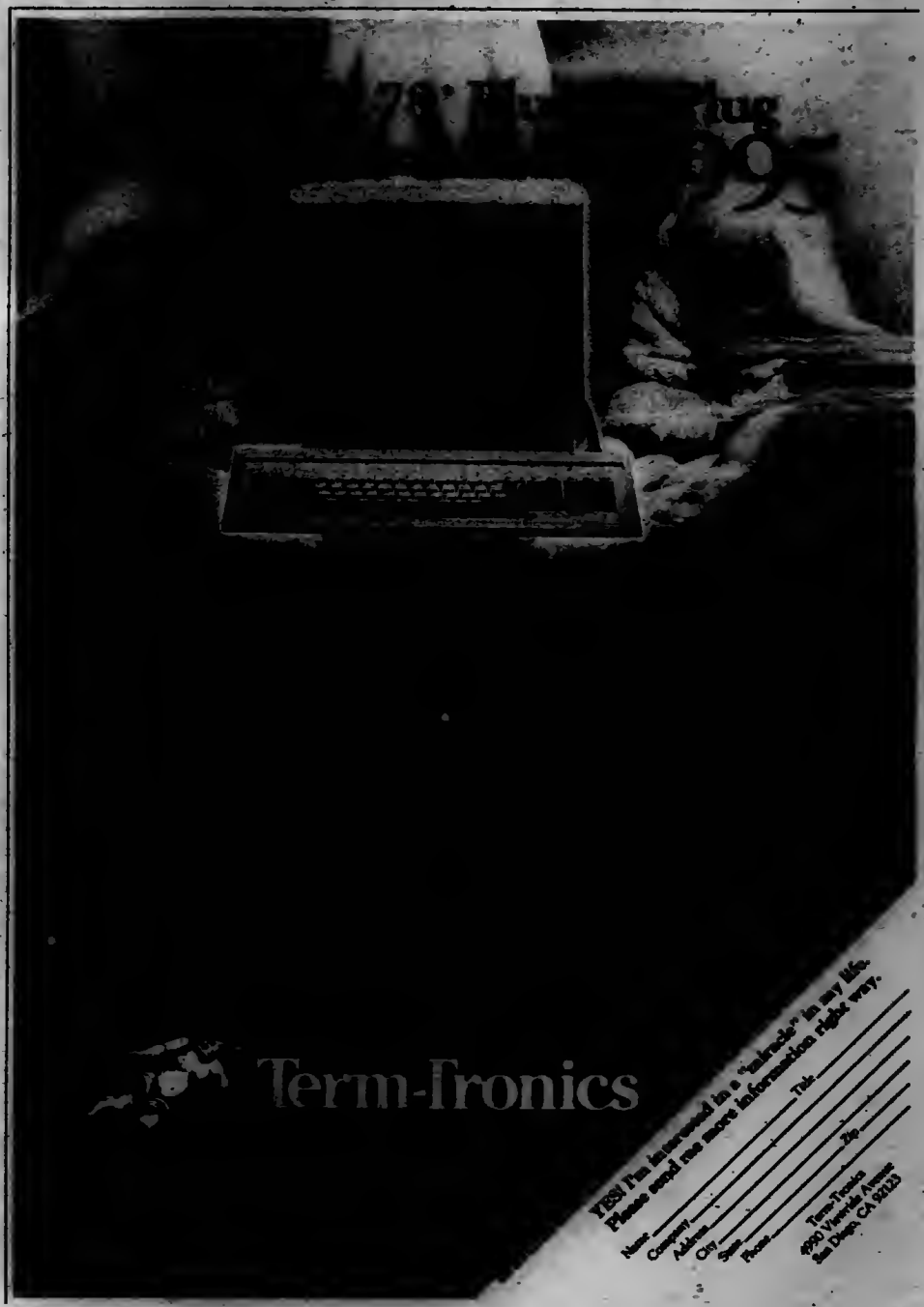
The Wang VS/SNA Gateway is said to run on all Wang VS systems, enabling a single VS on a Wang Systems Network (WSN) to act as a network concetrator for Systems Network Architecture (SNA) access. All Wang systems on the WSN can then share SNA resources without requiring each device to have an individual SNA link. The gateway, available in September, costs $1,000 and $600 per link end.

The PC SNA 3270 Network provides a similar function for Wang Professional computers. With the product, a Wang micro on a local network can emulate an IBM 3278 Model 2 workstation and can enable other Wang Professionals on the net to pass through it.

Available in September, the product costs $795 for each 3270 board and $395 for each gateway node board.

Wang's Distributed Management Facility (DMF) is said to enable central site network management for WSN networks and provide the foundation for future Wang management products. DMF functions include logging and report activities, network data base management, control over network components, interactive access to remote system information and administrative functions. Scheduled to be shipped in July, the standard version of DMF costs $1,500. An optional SNA monitor will be available in September for $1,500; a Wangnet management facility will cost between $17,000 and $24,000 and will be available in September.

Other announcements included the WSN X.25 General Access interface for packet-switched networks supporting the X.25 interface, which will be available in August for $1,000.



Security pro calls risk analysis reports waste of money

CW AT DP EXPO

By Mitch Betts
CW Washington Bureau

WASHINGTON, D.C. — In a presentation at the 11th Annual Federal DP Expo & Conference here last week, Adolph Cecula made a case for abandoning the government requirement that U.S. agencies prepare formal risk analysis reports on their computer security vulnerabilities.

Cecula, information security administrator for the U.S. Geological Survey (USGS) in Reston, Va., criticized the formal risk analysis approach, which typically uses a mathematical model to calculate the annual cost of possible disasters or security breaches. He said it is very time consuming and expensive, diverts the DP staff from actual risk management and mostly enriches the consultants hired to produce the report.

"I think it's about time we stop wasting money on studies of risk analysis. Instead, spend that money on protecting our information assets," Cecula said.

His paper on the subject received the Hammer Award, presented by computer scientist Carl Hammer, for the best paper at the conference.

Product of guesswork

Cecula said thousands of security professionals have been struggling for 10 years to improve the risk analysis process, without success. Often the calculations are the product of guesswork, he said, because of the difficulty of considering all possible disasters that could befall a computer system or a bevy of micros.

"You're almost pulling numbers out of the air" to plug into the mathematical model, Cecula said, referring to this as "garbage in, garbage out."

Cecula

"After you've done four or five risk analyses, you find that all of your recommendations look the same for similar systems. . . . A formal risk analysis isn't going to tell you anything new," Cecula asserted.

The alternative, he said, is a multifaceted program designed to protect the agency's information assets. At the USGS, a key part of this program is a questionnaire sent to program managers that lists vulnerabilities and then requires managers to state whether they accept a particular risk or are taking action to mitigate it.

"We require people to identify the owners of the computers, the applications, the data bases and the networks. They're held accountable for the protection of those assets," Cecula said.

Minimum security standards, such as off-site backups and documented emergency procedures, are incorporated into manuals distributed to employees, he said.

For systems that need more security than this baseline protection, Cecula said, the USGS uses a structured decision tree process to define security requirements.

Ultimately, the real test of security comes when disasters or hackers strike, he said, adding that "our program has been tested, and it has passed."

He said the USGS has experienced fires, floods, water leakage, disgruntled employees, power problems, unauthorized entry into computer rooms and hackers, but has had virtually no damage to its information assets.

OMB official backs agency's cost review rule

By Mitch Betts
CW Washington Bureau

WASHINGTON, D.C. — The U.S. Office of Management and Budget's (OMB) controversial Circular A-76, a document that requires federal agencies to use private-sector DP services when it is cost-effective, was strongly defended by an OMB official at the 11th Annual Federal DP Expo & Conference last week.

The policy is highly unpopular among the federal DP workers whose jobs are threatened. But David L. Muzio, deputy associate administrator of the OMB's procurement office, maintained that Circular A-76 is a "productivity tool" that encourages federal managers to use innovative methods to provide DP services at lower costs.

Circular A-76 requires federal agencies to review all their support functions, including DP services, to

See OMB page 15

Terminal/System Architecture Of IBM System Building

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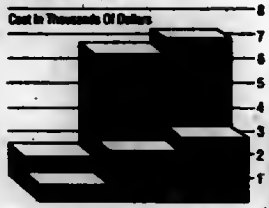

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NEWS

NFL drafts superminis to link teams to league office

By John Desmond
Of Staff

NEW YORK — When the National Football League (NFL) draft is held at the Omni Coster Hotel here tomorrow, sports reporters nationwide will appreciate the fact that NFL headquarters has added two Digital Equipment Corp. VAX-11/780 superminicomputers in the past year.

For the first time, reporters will be instantly supplied with reports listing which players were selected in each round. Prior to and during the season, the system will generate reports on what players have been cut or placed on injured reserve lists. Statistical analyses for use in subsequent player drafts will be made available once the ongoing VAX installation is complete. The new reports are made possible by more diversified DBC software than that running on the NFL's DBC PDP-11/70, which remains in place.

According to Harry Oliveti, manager of information processing at the NFL, "We're upgrading the types of programs we have and are adding more functionality to them." But the overall aim of the NFL's processor migration is to improve communications within the NFL, not so much with the outside world. The benefit to reporters is a bonus. "Our intent is to connect each club with the main league office and utilize the electronic mail system" of the VAX-11/780s, Oliveti said.

Establishing a link with each club's headquarters will not be a simple task, since many types of hardware are involved. "We chose DBC [equipment for the NFL headquarters] because of its ability to communicate with other hardware," Oliveti said. A decision has yet to be made on whether dial-up or leased lines will be used to link NFL offices, she said.

The NFL decided to wait for Release 4.0 of DBC's VMS operating system to become available before having the VAX-11/780s delivered. Thus, the original timetable of completing the installation by this year's draft was pushed back. The advantage of VMS 4.0 is its ability to take advantage of clustered processors and shared disk drives, according to Oliveti. The league has also purchased DBC's All-in-1 office and information systems software.

The NFL is more than doubling its installed capacity by adding the two VAX-11/780s. The capacity is needed to handle data processing and office automation functions.

The most labor-intensive aspect of the migration has been programming, Oliveti said. 500 Cobol programs, written since the league acquired its PDP-11 in 1979, had to be converted for use on the VAXs. As of last week, the task began in January was 80% complete, she said.

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OMB from page 14

determine if it would be more cost-effective to have them done in-house or by contracting out to private firms. The Reagan administration has given high priority to the program and identified data processing as a major target.

Muzio addressed a conference session called "Private Sector DP Services: Solution or Headache?" — a title he said he disliked.

'A productivity tool'

If federal DP managers can bring their costs down to the level of private-sector DP service vendors, Muzio explained, they can avoid contracting out. "[The] OMB has been unable to communicate to the federal work force that A-76 is not contracting out, but is a productivity tool," he said.

According to Muzio, Circular A-76 puts federal DP managers in competition with the private sector to provide computer services to their clients. He said federal managers are capable of meeting the competitive challenge if they discard old ways of operating and try innovative approaches.

"They ought to be able to win most of the [Circular A-76] reviews," Muzio said.

He added that 49% of the A-76 reviews are now won by federal workers, compared with 40% several years ago.

'Taxpayer deserves that break'

Muzio did not specify what innovative steps DP managers could take to compete with private vendors, but he noted that government offices generally must reduce their staffs and salaries to be competitive. "We think the taxpayer deserves that break," he said.

Paula R. Ewen, a computer specialist at the U.S. Department of Transportation, said she conducted two A-76 reviews, and in both cases, the DP services were contracted out. In one case, 32 government jobs were cut and $548,000 was saved in a three-year period.

In the other case, Ewen said, 80 government jobs were cut and $2.2 million was saved in a four-year period.

She urged federal managers to get employees excited about competing with the private sector in order to encourage innovative ideas about providing better DP services at lower costs.

Manufacturing firm puts wrap on report distribution

By Donna Raimondi
CW Staff

FRAMINGHAM, Mass. — A supermarket meat-wrapping machine inspired the solution to report distribution problems in a company here recently.

The Dennison Manufacturing Co. had rejuvenated its report distribution process during the past few months but had not come up with the final bit of the distribution puzzle, said Gary Kelley, manager of user services at Dennison Manufacturing here — not, that is, until Kelley took a walk through a supermarket.

Dennison produced five million custom forms and used 12.8 million sheets of stock computer paper for reports in 1984, Kelley said. In addition, 1.5 million sheets of paper were printed on an outside service bureau's laser printer at a cost of $34,000 per year, he said. "You could loop the paper we used in one day over Mt. Everest," he said.

Two IBM 3203 Model 5 impact printers (technology circa 1965) produced reports at Dennison's main office that then had to be separated, addressed and distributed to Dennison divisions around the country, Kelley said. "We wanted to be able to print at remote locations, such as Crossville, Tenn., where we have a plant," he said, and overnight deliveries were insufficient.

The company had installed a batch report distribution system that was not meeting its needs when it heard about a software package called VS Dispatch, developed by Value Software, Inc. of Cherry Hill, N.J. The on-line software allowed Dennison to distribute reports to many different plants at the same time for printing at remote locations, Kelley said.

Shrink-wrap operation

VS Dispatch, which costs $32,000, continually looks at the MVS operating system and the JES2 print queue for any jobs of a particular classification and it builds bundles according to mail drop location, he said.

Before the new system, if user A and user B wanted different portions of a report but had some overlap in what they needed, the report would be printed on two-part paper, separated and distributed, Kelley said. "We threw away 22 30-gal. drums of paper a day in waste," he said. The manual labor was heavy and error prone, he said.

The new system directs the printer to print only what is needed for each person, Kelley said. It prints the user name and location in bold letters on the report, he added.

If a user calls and wants to know where his report is, Kelley can find out where in the print process it is, he said, by logging on and looking the file up on line.

When reports are finished, they are automatically archived onto tape, which Kelley keeps for a month, he said. Dennison has saved $86,000 in rerunning costs because of the archiving system, he said. "If somebody spills coffee on his report, loses it in the mail or just wants an additional copy, we pull it in from tape and print it again," he said.

After solving that part of the report generation problem, Kelley looked at the printers themselves and decided that they were inadequate. He called in IBM, who told him that his company did not have enough volume to justify bringing in the IBM laser printer, he said. He also could not justify $244,000 for a Xerox Corp. laser printer, he said, but he looked around and found a Royal Business Machines, Inc. Royal 8800 ion deposition printer (which is a Delphax Systems 86000 printer) that would meet his needs and costs $82,000.

The company installed the 60 page/min, cut-sheet printer and uses three-hole copier paper in it, Kelley said. The machine, based on a cold fusion ion deposition process in which chemicals instead of heat are used to bond toner onto pages, requires no special air-conditioning and sits out in a hall, he said.

When report generation and printing were taken care of, Kelley thought it was silly that people were still stuffing the already-addressed reports into envelopes and re-addressing them, he said. He mulled the problem over without finding a proper solution, he said, until he went shopping in a supermarket one day and saw a meat wrapping machine in action. "I had no idea what the cost would be or if it would be worth it," he said, but he made calls and discovered he could get a shrink-wrap machine from Bessler Corp. of Florham Park, N.J., for $4,000.

Now when the reports come off the printer, a staff member puts a piece of cardboard behind the report and runs it through the shrink wrapper, he said. Users have been sending him notes telling him how much they like the new system, he said.

"We haven't put everything on it yet because we've only had it since September," Kelley said. Manufacturing reports, source data collection data, on-line order entry and internal MIS reports are on-line now, and by the end of the year Kelley hopes to have everything else on the system, he said. The 24 copies of the general ledger reports will be cut down to 12 copies when it goes on the system, he said.

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AMA plans conference

SAN FRANCISCO — An American Management Association (AMA) seminar — "Long-Range Information Systems Planning" — will be held at the Ramada Renaissance here June 3-5. The seminar is geared toward vice-presidents and directors of management information systems and DP and executive teams involved in planning information systems.

The seminar, which will also be held at the Back Bay Hilton in Boston on June 17-19, consists of courses in information systems planning, planning techniques and planning documents.

The registration fee is $775 for AMA members, $860 for nonmembers. Team fees are available. More information is available from the AMA, P.O. Box 319, Saranac Lake, N. Y. 12983.

Panel asks: What information should MIS produce?

By Charles Babcock
CW New York Bureau

NEW YORK — Jack E. Schang, chairman of Ryder/PIE Nationwide, said that when his company has a big problem to solve, he tries not to call on MIS.

"If [MIS] gets involved, it will take too long," he explained to business and MIS executives at the two-day seminar, "New Opportunities in Management Information," organized by the Conference Board, a business advisory research group.

"That's a terrible thing to say because I'm supposed to be leading them," added Schang, one of four seminar speakers.

Nevertheless, his comment prompted seminar attendees to question what information MIS should be trying to provide and how quickly.

Irma M. Wyman, vice-president of corporate information management at Honeywell, Inc., said the Internal Revenue Service and Big Eight accounting firms — rather than a business' top executives — have tended to frame the definitions of what information will be available.

'Certifiable antiques'

She called general ledger and other basic business software "certifiable antiques" but said MIS directors run into protests from operating unit managers if they try to implement change.

She charged that the assumptions behind the business are not available as components in these systems, and they rarely offer the opportunity to pose "what-if" questions. "None of these systems was designed to analyze the organization as a whole," she said.

Two other speakers said MIS managers could resolve the dilemma described by Schang and Wyman by redefining the way they look at information.

Because business conditions can change so quickly, MIS needs to pay more attention to external information as well as internal data, noted Jay W. Lorsch, a human relations professor at the Harvard University Business School.

Lorsch said all company MIS departments were still struggling to provide information on moving oil supplies to market when their top managers had an oversupply on their hands.

Profitability for a company and its competitor needs to be reported, Lorsch said. Traditional market-share data must include information on whether overall markets are expanding or contracting, he said.

MIS also needs to try to quantify internal information that has been supplied by intuition in the past, he continued.

One of the biggest needs is for "systematic information on how top management is doing; some people are good at growing the business, some are good at squeezing and cost cutting," Lorsch said.

To provide this type of information, the MIS manager needs to stop being a technologist concerned with running data-handling machines and become a chief information officer, said Penwicke W. Holmes, president of the International Academy at Santa Barbara, Calif., a nonprofit institute studying the transition to an information society.

A chief information officer would be able to integrate into reports external data and text explaining what that data means, because the officer would understand the underlying principles of the business, Holmes said.

The officer would be in close communication with top management and understand what information it needed rather than supplying data based on past practice. The officer would participate in strategy planning and "be perceived as being of vice-presidential caliber," Holmes said.

MIS is becoming "the central nervous system" of a business, but too few corporate executives see it that way, Schang said. In some instances, the "vending machine" approach to MIS prevails, Wyman added. "Push the buttons, and if it doesn't deliver, kick it."

Software AG users meet set

NASHVILLE — Software Jamboree, the 14th annual international user's conference, will be held May 19-23 at the Opryland Hotel here.

The conference will feature tutorials and classes on a variety of information management software products from the conference sponsor, Software AG Systems, Inc. Instructors will discuss technical issues relating to vendor products including the Adabas, Natural and Com-Plete software series.

The keynote speaker is NBC News correspondent Edwin Newman. The guest speaker is Carma McClure, software consultant and coauthor of four books on major structured technologies.

Registration fee for the conference is $595. More information is available from Software AG, 11800 Sunrise Valley Drive, Reston, Va. 22091.

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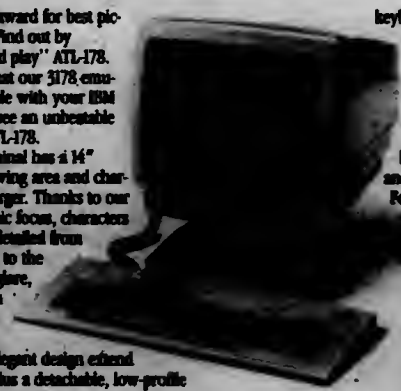

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WASHINGTON UPDATE
Ryan Hilera
CW Washington Bureau

Bill allows federal agencies to enter multiyear contracts

WASHINGTON, D.C. — U.S. Sen. William S. Cohen (R-Maine) recently introduced legislation that would allow civilian U.S. agencies to enter multiyear contracts for DP equipment and services and therefore take advantage of the price discounts offered with long-term contracts.

Civilian agencies now are restricted to one-year contracts, coinciding with the annual congressional appropriations.

Cohen said the bill (S. 678) permits an agency to enter a multiyear contract if there is a "reasonable expectation" that additional funding will be forthcoming and if a long-term contract benefits the government.

When customers commit to long-term leases, Cohen said, some DP vendors provide discounts ranging from 62% to 75% of the one-year lease rate.

He said a government study found that customers (such as the government) who are restricted to one-year leases have paid as much in two years as other customers pay in five years.

The bill was referred to the Senate Committee on Governmental Affairs. Last year, the U.S. Senate passed the bill by unanimous vote, but it was not enacted by the U.S. House of Representatives.

GSA program to require triennial DP office reviews

WASHINGTON, D.C. — The U.S. General Services Administration (GSA) has established the Federal Information Resources Management Review Program, which requires federal agencies to conduct triennial reviews of their information systems and activities.

As required by the Paperwork Reduction Act of 1980, the reviews will be conducted by each federal agency, supplemented by GSA evaluations, and then submitted to the Office of Management and Budget and to Congress.

The objective is to "determine if each agency is carrying out its information management activities in an efficient, effective and economical manner in support of program missions and objectives," the GSA program regulation said.

U.S. privacy policy board proposed by House bill

WASHINGTON, D.C. — A bill to create a permanent U.S. privacy board to oversee domestic and international privacy policy was recently introduced by U.S. Rep. Glenn English (D-Okla.), chairman of the House Subcommittee on Government Information, Justice and Agriculture.

English said the bill (H.R. 1721) would establish a Data Protection Board as an independent federal agency with 30 employees. Domestically, the board would oversee the government's compliance with the Privacy Act of 1974 and help develop data-protection standards for private industry.

The congressman complained that privacy issues have been neglected by the U.S. Office of Management and Budget and by the National Telecommunications and Information Administration.

In international affairs, the proposed privacy board would help U.S. companies comply with foreign laws, coordinate U.S. policies with those of other nations and consult with foreign data-protection officials. English noted that Austria, Canada, West Germany, France, Norway, Sweden and the UK have established data-protection agencies.

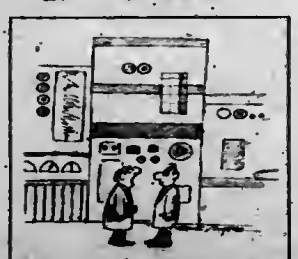
Army to offer guidelines on information center setup

WASHINGTON, D.C. — The U.S. Army's computer research institute is developing guidelines for Army offices to use when starting information centers, Maj. Terry Hilderbrand told the Association of Federal Computer Users last week.

He said the guidelines will outline policy choices about how an information center will be funded, organized and staffed and what functional roles it will play in end-user training, product evaluations, microcomputer standards and consultations.

Hilderbrand said the document, available in about 12 months, will be based on empirical research being conducted at the Health Services Command information center at Fort Sam Houston in San Antonio, as well as on advice from other government information centers.

More information can be obtained from the Army Institute for Research in Management Information and Computer Sciences, 115 O'Keefe Building, Georgia Institute of Technology, Atlanta, Ga. 30332.



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Human Resource Management That Helps Your Bottom Line

Vendors must tell users 'what information really is'

ICP keynote speaker gives advice to execs

By John Gallant
CW Staff

SCOTTSDALE, Ariz. — If they are to prosper in the 1980s, software vendors have to stop selling data "by the pound" and start providing users with more concise and valuable information.

That was only part of the charge made by the keynote speaker to software vendors attending the International Computer Programs, Inc. (ICP) Million Dollar Awards & Executives Conference held here recently. In addition, ICP President Larry Welke said that software developers must take on the job of "teaching the world what information really is.

"The software industry caused information to be as plentiful as it is today," Welke told his audience of software industry executives. "But if we are not careful, users will choke on all that information and that will slow all of you [software vendors] down.

"You must begin to realize that there is such a thing as information precision. You can provide users with less information — information that is more valuable, better controlled and better managed. You must show users that information is a product that can be defined, that has limits. In the coming information society, the power brokers will be those who know what information is and who will pay to get it."

Welke warned industry executives that they must remain cognizant of the changing face of the computer industry if they are to survive in the coming years. One of the most important changes software vendors must deal with today, he said, is the rise of end-user programming, which has been spurred on by the availability of such products as fourth-generation language tools.

"I have seen research that indicates [that] 10% of the programs written in 1984 were written in a fourth-generation language," Welke said. "Four years from now, that figure may be as high as 60%. That will affect you greatly. End-user programming has changed the relationship between end users and data processing professionals, and the relationship between end users, DP and you. It has restructured the DP function."

Welke said end-user programming has spawned the rise of autonomous information, production and development centers within organizations where once the DP department had sole control over information processing.

"That segments the market into which you sell," Welke said. "The organizational decision-making process and the people involved in it are different. The changing environment has even given rise to a new type of person with whom you must work — the chief information officer, who is primarily a businessman where the DP manager was not."

And, Welke cautioned, software vendors must not overestimate the impact of microcomputers on the world of information processing.

"The micro challenge is past tense," he said. "Micros have happened, we have already gone through that revolution. Is the world going to hell in a micro hand basket? No.

"The real value of micros," Welke continued, "is as nodes on a network — not as personal computers but as tools for personal computing. Micros have had an impact on DP but they are only part of the overall picture."

Asis' midyear meeting slated for next month

FORT LAUDERDALE, Fla. — The midyear meeting of the American Society for Information Science (Asis) will be held May 19-22 at the Bahia Mar Hotel here. The theme of the conference is "Telecommunications and Networking."

Topics to be covered at the meeting include telecommunications concepts and terminology, applications of the technology and related governance, policy and management issues.

The keynote speaker will be Stephen B. Weinstein, division manager of the Network Services Research Division of Bell Communications Research, Inc. in Morristown, N.J. The keynote address topic will be, "What Can We Expect from the Intelligent Wideband Communications Network of the Future?"

Other scheduled speakers include Edwin B. Brownrigg, director of the Division of Library Automation at the University of California at Berkeley, and John Coppett, district manager of AT&T in Atlanta.

Registration for the conference is $100 for Asis members and $130 for nonmembers.

Further information is available from Asis, which is located at 1010 16th St. N.W., Washington, D.C. 20036.

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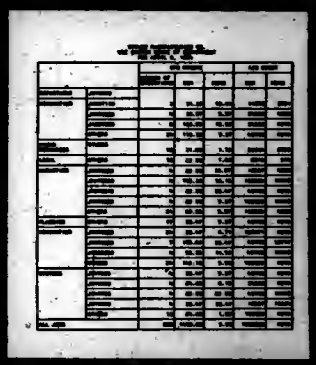

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Long-term view boosts software vendors' survival odds

By John Gallant
CW Staff

SCOTTSDALE, Ariz. — If a software vendor hopes to survive alongside an increasingly software-conscious IBM, it had better develop "well-behaved" products.

Vendors must also sell a "long-term software concept" rather than simply a set of products, said Scott Smith, vice-president of the Gartner Group, Inc. and an IBM watcher. Smith addressed a group of software industry executives at the recent International Computer Programs, Inc. (ICP) Million Dollar Awards & Executives Conference here. He outlined the unique problems and opportunities independent software vendors face in dealing with IBM, which has come to see software as a vital component of its revenue-boosting strategies.

> *'Listen to IBM on its strategic products, and IBM will keep you compatible.'*
>
> — Scott Smith
> Gartner Group, Inc.

Smith identified well-behaved products as software targeted to what IBM considers its own strategic software offerings.

"If you are a well-behaved applications developer, if you use IBM's operating systems and its strategic development tools and write to its user interfaces, IBM will protect you. If you avoid, ignore or tamper with those strategic products, you do so at your own risk," Smith said. "IBM will not worry about you when it announces a hardware upgrade. That will make it very costly for you to upgrade when IBM does."

The trick, according to Smith, is for the independents to divine which products IBM is not only offering but also emphasizing. For example, "VM is much more strategic than [AT&T's Unix] for IBM," he said. "That is an important difference for software developers to recognize.

"IBM is aggressively educating vendors as to where to deliver applications. Listen to IBM on its strategic products, and IBM will keep you compatible. Otherwise, you run the risk of being a plug-compatible software vendor always trying to catch up. Utilizing IBM's strategic products is the key to compatibility and ease of migration."

Marketing a long-term software concept — as Cullinet Software, Inc. has successfully done — can help contrast an independent vendor with IBM, which faces a number of important problems in presenting a consistent, integrated software line, Smith said. IBM simply has too many software products to maintain because these products are provided to users on a leased rather than a sale basis, he explained.

Big Blue is also hamstrung by the complexity of its structure. Thus, he noted, "It is hard for IBM to develop an integrated solution, as many other vendors have been successful in doing today."

Independent vendors should also seek to build recurring revenue streams, Smith advised. Some of the methods he outlined for doing that included value pricing based on the number of concurrent users, transaction-based pricing and renewable rather than perpetual license arrangements.

In the software pricing arena, he said, IBM is actually providing a service to the independents through its emphasis on lease pricing and its regular, periodic price increases.

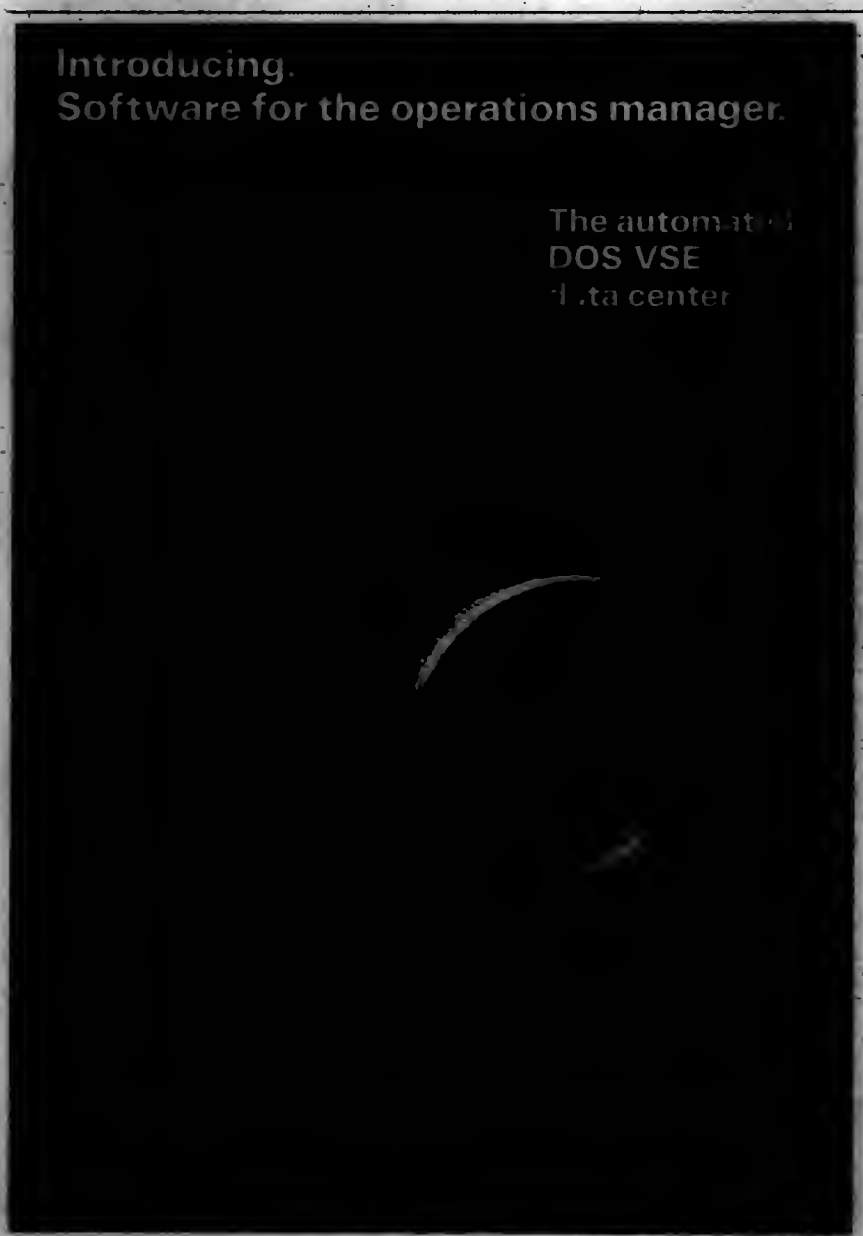
"IBM is educating users to pay more for software as an increasingly important part of the overall product," Smith said. "That helps all of you."

IBM's software strategy

According to Smith, the basics of IBM's software strategy involve the following:

- Narrowing its software focus.
- Providing software that has close ties to IBM hardware.
- Providing software critical to account control.
- Providing software that can be leveraged across the broad installed base of IBM hardware.
- Focusing on market areas where there is little threat of competition.
- Building a consistent set of interfaces for both applications developers and end users.
- Enforcing the standards necessary for distributed processing.
- Educating and encouraging third parties to fill niche needs.
- Enhancing the functions of its software and increasing prices.

"The [independent] software industry has a number of things going for it today," Smith said. "There is no substitute for software, and there is as yet no downward price trend in the software market. There is no evidence that IBM will take over everyone in the industry."



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Canadian DEC top vendor in country's computer count

Ontario boasts most installed systems

By Susan Richmond
CW Staff

TORONTO — The lion's share of the computer business in Canada belongs to Digital Equipment of Canada, and the province with the most computer installations is Ontario.

These are statistics determined by the 1985 Canadian Computer Census published recently by the Canadian Information Processing Society. At the end of 1984, 3,246 computers out of the total of 13,607 computers for all provinces were Digital Equipment of Canada equipment. IBM Canada Ltd. followed closely with 3,118 computers, the report said.

The census contains a list of systems in Canada whose CPUs cost at least $70,000 or which rent for $1,000 or more per month, the report said.

Of the 13,607 computers rented or purchased in Canada, 5,887 reside in the province of Ontario, the study showed. The province of Quebec accounts for 2,490 installations; British Columbia shows 1,602 systems; and Alberta has 1,467.

Trailing the pack was the Yukon, with a total of nine reported computer installations.

Manufacturers account for the largest number of machines (2,501) across all classes of rentals, the report said. A large share of those manufacturers' rentals (859) are in the $2,000 to $4,999/mo range, suggesting computer systems in the $70,000 to $174,999 sales price range, the report said. Machines in the $35,000 to $69,999 class (rentals of $1,000 to $1,999/mo) account for another 701 rentals by manufacturers.

Government leads large system rentals

The Canadian government is the next largest renter in the country, with a total of 1,578 rentals, of which 442 are in the $2,000 to $4,999/mo range, and 578 are in the $1,000 to $1,999/mo span, the study said. The government is by far the biggest renter of large systems. It accounts for 46 rentals in the $100,000/mo and over category, suggesting machines with purchase prices of $3.5 million and up.

Other big-machine users are service bureaus (computer systems and software companies) with 28 rentals of $100,000/mo or more; insurance companies, with 29 large system rentals; and financial institutions, with 28 such rentals, the study said.

Service bureaus rent 1,466 systems, with 533 of those systems in the $1,000 to $1,999/mo range and 435 in the $2,000 to $4,999/mo span. The service bureaus also have 227 systems in the $5,000 to $9,999/mo span, which translates to machines that cost $175,000 to $345,999, the study said.

Wholesale and retail distribution businesses account for another 1,411 rentals in Canada, most of which are in the small systems category. Other industries whose installations are measured by rental class include primary or resource industries (agriculture, forestry, fisheries, mining), construction, transportation, utilities, communications, service (unions, professions and associations), petroleum, educational, medical, legal, accounting and hospitality.

> ❞
> *The Canadian government is by far the biggest renter of large systems.*

Of the smaller systems rented in Canada, Digital Equipment of Canada leads the pack of vendors with 1,296 of the $1,000 to $1,999/mo machines; 936 of the $2,000 to $4,999/mo systems; and 609 of the $5,000 to $9,999/mo class installations.

IBM trailing in smaller markets

IBM trails Digital in the smaller markets, although it comes close in the $2,000 to $4,999/mo category, with 832 installed systems, the report said.

IBM takes over in the three ranges that bridge the $10,000 to $99,999/mo rental classes, suggesting machines ranging in value from $350,000 to $3.5 million, the study said. It accounts for 371 systems rented in the $10,000 to $19,999/mo range ($350,000 to $699,999 cost); 330 installations in the $20,000 to $49,999/mo rental span ($700,000 to $1,749,999 cost); and 148 rentals in the $50,000 to $99,999/mo range ($1,750,000 to $3.5 million price), the study said.

The census report includes tables on computer installations in Canada by manufacturer within province; by industry within rental class; by manufacturer within rental class; by manufacturer within industry; and rental class by province.

It also contains a historical record from 1964 to 1984 by province or territory and a list of installed computers by province, city, user and type.

The study is available for $150 from the Canadian Information Processing Society, 243 College St., 5th Floor, Toronto, Ont. M5T 2Y1.

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TeleVideo corrects the VT220 key mistakes.

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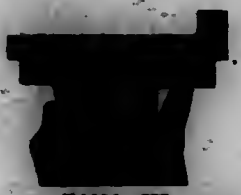
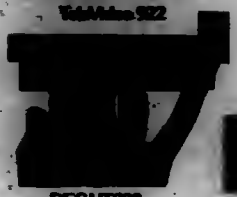


TeleVideo 922



DEC VT220

1. Take our keyboard, for example. The RETURN key is within direct, easy reach. But VT220 users must stretch over an additional key to hit RETURN. Or have the hands of a concert pianist.

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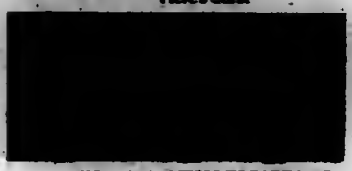


Where's the VT220 ESCAPE key?

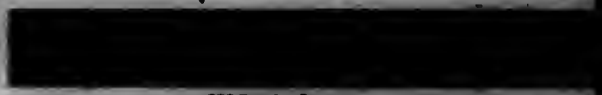
2. Our ESCAPE key is located above the TAB key, right where you'd expect to find it.

Theirs isn't.

In fact, you have to go hunt for the VT220 ESCAPE key halfway across the row of function keys.

3. Take a look below at the 922 keyboard. That's a true accounting keypad, complete with a Clear Entry, Double Zero and a TAB key. Not merely the numeric keys you get with the VT220.

4. Our SHIFT key is exactly where it should be, so it does exactly what it should do—shift. Their SHIFT key is shoved over by the < and > key to create lots of < and > on the CRT. Of course with a little practice, you could relearn their keyboard. But why, now that you've seen our 922?



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VT220 Display Screen.

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Programmable Function Keys	15 (30 with shift)	15 (shifted only)
True Accountant Keypad	YES	NO
Plug-in Graphics Upgrade Option	YES	NO
Full Tilt & Swivel	YES	NO
Enhanced ANSI Mode	YES	NO

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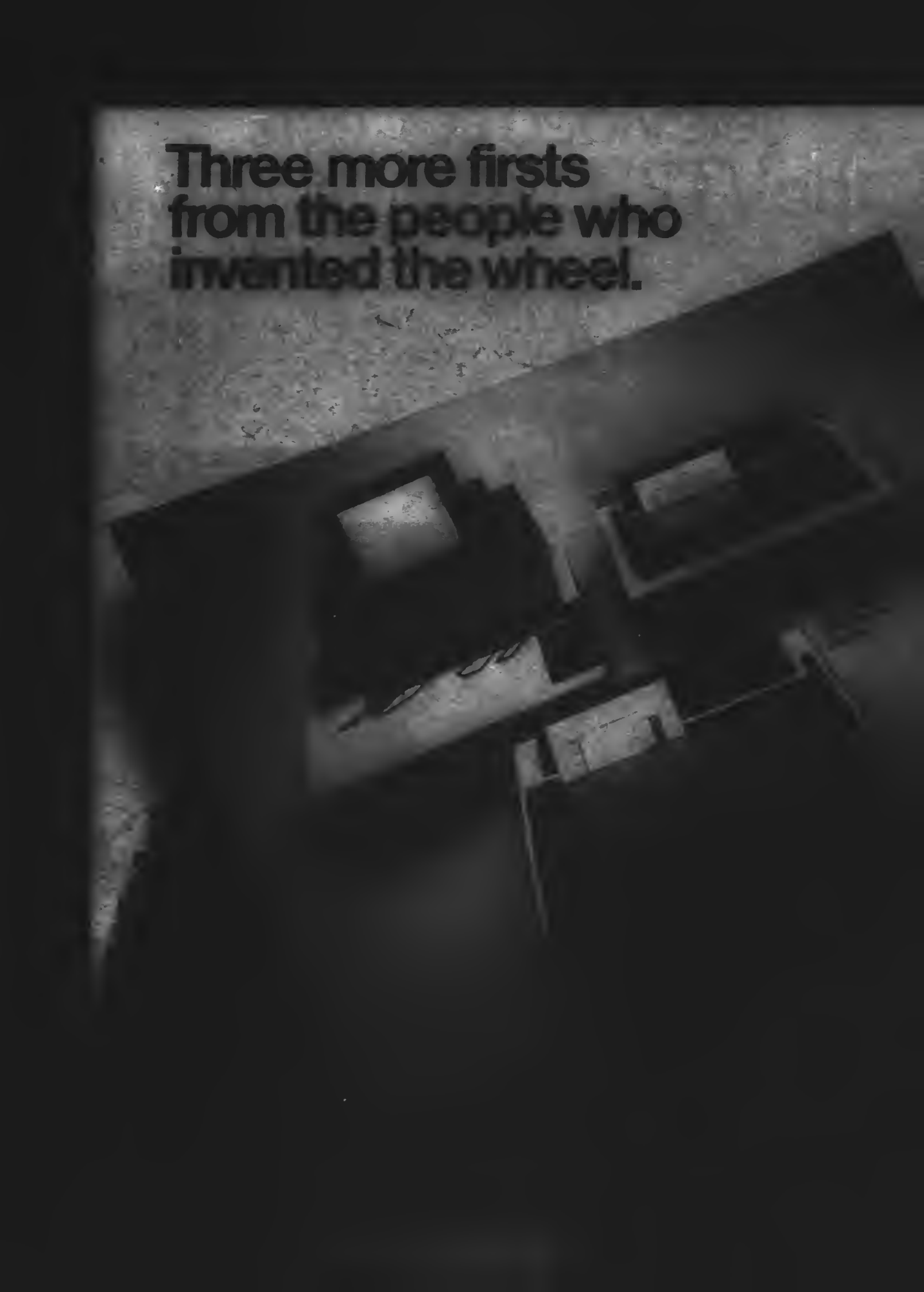
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NEWS

INTERNATIONAL REPORT
CW International News Network

AUSTRALIA

BRISBANE — The first in a stream of Digital Equipment Corp. VAX 8600 systems has been installed here at Queensland Newspapers Pty. Ltd. The Queensland Newspapers' 8600 is thought to be the first such installation outside the U.S.

DENMARK

COPENHAGEN — The Danish state-run telephone company, KTAS, has signed a $14 million contract that spans 10 years with Siemens AG. Under the terms of the agreement, Siemens will provide the phone company with digital switching equipment for telephone exchanges.

FRANCE

PARIS — France's state-owned computer giant, Bull, just signed a $6.5 million agreement with China to be the supplier of Bull DPS 7 mainframe, five DPS 6 minis and 54 Micral 30 micros. The contract, signed with the Chinese National Technical Import Corp. (CNTIC), will provide equipment for 10 Chinese universities and agricultural research centers. In addition to hardware, the agreement calls for Bull to send applications engineers to China for in-house training and to host 50 Chinese trainees in France. Bull is the first European high-technology firm to win an order from CNTIC.

WEST GERMANY

HANNOVER — More and more developers of micro software are turning down copyright protection for their programs. A recent example of this trend was evidenced here by Microrim, Inc. and its German distributor RHV-Softwaretechnik, which refused to protect their relational data base program R:Base 4000. According to RHV spokesman Klaus Spieker, the ratio of purchased software to copied programs for commercial use here does not exceed 1:2.

■

HANNOVER — In spite of the slump in the U.S. semiconductor industry, the German market is booming. Industry insiders expect a successful sales year for 1985, according to Friedrich Ruf, chairman of the Union for Electronic Components. Ruf voiced his opinion at Germany's Hannover Faire, stating that the union predicts increases in semiconductor sales of almost 9%, amounting to $3.6 million this year.

■

MUNICH — A recent user survey conducted here revealed that German DP professionals most often preferred IBM machines to plug-compatible equivalents from BASF, National Advanced Systems, Inc. and Nixdorf Computer GmbH. The "overall satisfaction" survey, conducted during January by Datapro Research Corp. and *Computerwoche*, the German subsidiary of *Computerworld*, polled 800 computer users. The machines that got the highest marks included the IBM 3080 series, Bull's DPS 7 and the Fujitsu Ltd. 7800 systems, which Siemens AG sells here. The top-rated mini maker was Tandem Computers, Inc. with its line of Non-stop systems, followed by [illegible].

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Today, in an age when productivity is threatened by information overload, the need for cost-efficient information management is greater than ever.

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We've focused our resources on specific lines of business—emphasizing finance, manufacturing and distribution, health care, government and education among others. And we've developed complete systems to meet their special information processing problems.

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In an industry where many companies don't last a decade, Burroughs is proud to be launching our second century.

The experience and insights we've gained are helping us develop new solutions that will benefit our customers and their profitability for the next hundred years.

Burroughs

OF THE BIG THREE IN BUSINESS SOFTWARE TODAY, WHO'LL BE ON TOP TOMORROW?

If you look at the big three, you see that each of us has a fast growth rate, and each claims to have "total-solution" software. A multiplicity of packages that give you complete mainframe capability, plus a PC link.

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So it only makes sense that our video terminals are substantially more compatible up and down the Digital family line. Each new generation, for example, brings with it all the important elements from previous generations. Which is why you'll find some of our customers using 10 year-old VT52™ terminals with brand new VAX systems. The simple fact is, Digital has always been committed to protecting your investment with every move you make.

In addition, our breadth of [illegible] Digital can provide you with a total solution. [illegible] software and peripherals. [illegible] single sourcing [illegible] certainly [illegible]

[illegible]

When asked to single out the strongest feature of Digital's video terminals, many users point to the most visible asset of all. Durability.

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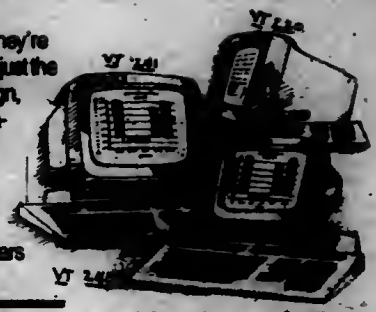

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Hannover Faire to trim size

By Susan Blakeney
CW Staff

HANNOVER, West Germany — The big news at West Germany's — and possibly the world's — biggest trade show was not necessarily on the product floor but behind the scenes. It was there that the decision was made to make this year's Hannover Faire the last one of its kind.

Billed as "The Fair of Fairs," the Hannover Faire's reputation for drawing mammoth crowds went unchallenged this year as approximately 800,000 attendees from 44 countries flooded through its gates.

The fairgrounds, consisting of 24 separate exhibition halls and parking for 50,000 cars, showcased a record 6,778 exhibits. And despite its vast proportions, scores of would-be exhibitors had to be turned away this year.

Show size seated down

This reason, coupled with the city's inability to handle such an infusion of people, forced the consortium of city and state government agencies that sponsors the annual April event to decide to pare the show down.

The hotly debated topic pitted people who wanted the show to remain the same against those that favor taking the World Center for Office, Data and Communications Technology (Cebit) segment out of the show.

This year the Cebit exhibits spanned five exhibition halls, occupied 18% of the show's floor space and attracted roughly 250,000 guests.

The concept behind breaking the Cebit exhibit out from the main show is ostensibly to "make the Hannover Faire more attractive by featuring new technologies and creating a more industrial accent," which is not deemed possible given present space constraints, according to show sponsors. The sponsors decided to hold a separate Cebit show next year on March 12-19. The remaining part of the Hannover Faire, featuring manufacturing, engineering and agricultural equipment exhibits, will take place during the week of April 9-16, 1986.

Critics of the plan to separate the Cebit show from the main event claim that the Hannover Faire — and thus the city of Hannover — will ultimately suffer. They claim the show's big drawing factors are its size and great mix of people.

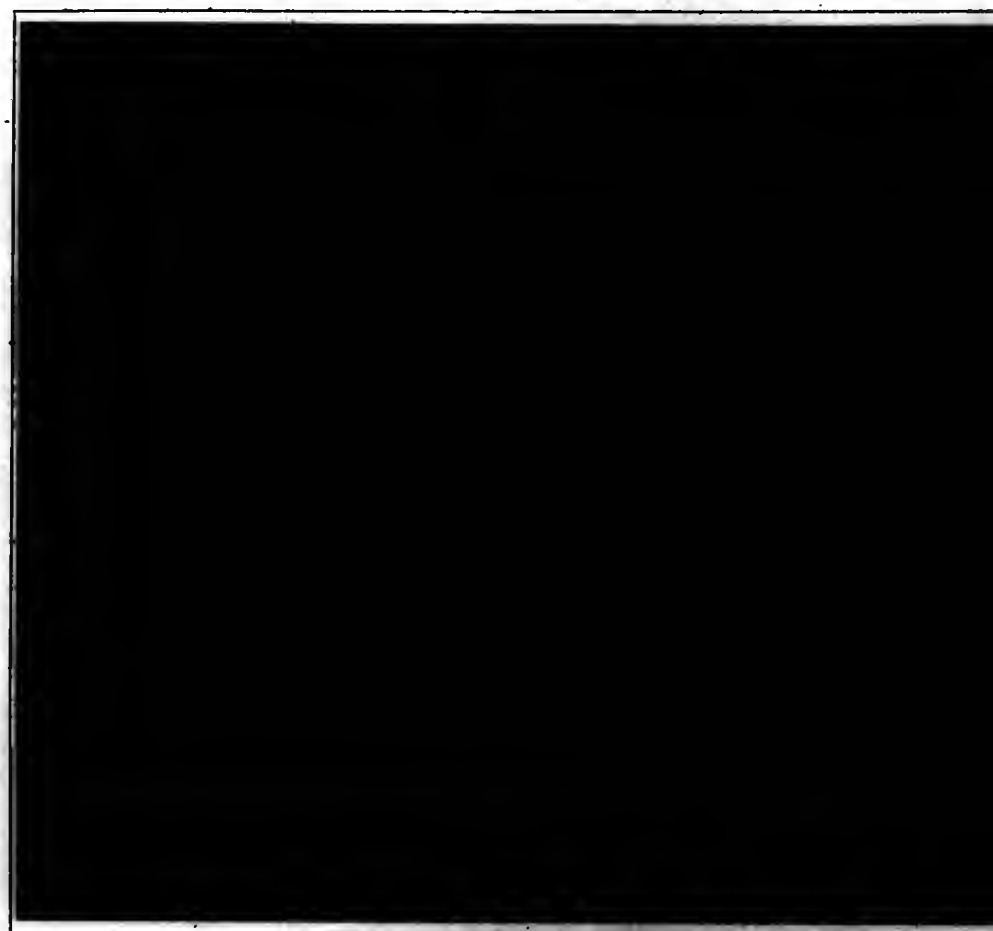
"The best thing about Hannover Faire is that everyone is here. That will not be the case next year. And I do not think people can afford to come to both," according to Wolfgang Veder, a computer engineer with the West German board of agriculture.

"If they could fit more vendors in I think they would keep the Hannover Faire the way it is. But they are losing money when they turn people away," Veder added.

The concerns of show aficionados notwithstanding, city restaurants, taxi lines and hotels will be slightly less populated during next year's Hannover Faire. Show sponsors, steadfast in their decision, argued that future shows will allow "greater emphasis [to be] placed on key target groups," and that the increased display space freed by dividing the Cebit show from the Faire will "improve the character of the Hannover Faire."

CW PHOTO BY SUSAN BLAKENEY

Hannover Faire's exhibition floor



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*Integrated systems contracts over $25,000,000 (does not include military, component and service awards), as reported in Electronic News, IDC Week and Computer Systems News between January 1, 1982 and December 31, 1984.

CALENDAR

WEEK OF MAY 26

MAY 28-30, KINGSTON, ONTARIO — 15th Annual Symposium on Multiple-Valued Logic. Contact: H. T. Mouftah, Department of Electrical Engineering, Queen's University, Kingston, Ont. K7I 3N6, Canada.

MAY 28-31, NEW ORLEANS — The Seventh National DEC-Compatible Industry Exposition (Dexpo South '85). Contact: Angela Wright, Expoconsul International, Inc., 55 Princeton-Hightstown Road, Princeton Junction, N.J. 08550.

MAY 28-29, CHICAGO — VS Cobol II. Contact: Syscd, Inc., 35 W. 35th St., New York, N.Y. 10001. Also being held May 30-31 in New York.

MAY 28-31, SAN FRANCISCO — CICS Application Design. Contact: Syscd, Inc., 35 W. 35th St., New York, N.Y. 10001. Also being held May 28-31 in New York.

MAY 28-31, NEW YORK — TSO IPF. Contact: Syscd, Inc., 35 W. 35th St., New York, N.Y. 10001.

MAY 29-30, DALLAS — Opportunities and Pitfalls. Contact: Ken Orton, Future Computing, Inc., 8111 LBJ Freeway, Dallas, Texas 75251.

MAY 29-31, SAN FRANCISCO — Introduction to Data Communications. Contact: Systems Technology Forum, 9000 Fern Park Drive, Burke, Va. 22015. Also being held May 29-31 in Houston.

MAY 29-31, BOSTON — International Conference on Computerization of Medical Records. Contact: Peter Waegemann, The Institute for Medical Records Economics, Inc., 121 Mount Vernon St., Boston, Mass. 02108.

MAY 30-31, BOSTON — Negotiating Computer Contracts. Contact: Law & Business, Inc., Harcourt Brace Jovanovich, Publishers, 855 Valley Road, Clifton, N.J. 07013. Also being held June 17-18 in San Francisco.

MAY 30-31, WASHINGTON, D.C. — Legal Issues in Acquiring and Using Computers. Contact: New York University, School of Continuing Education, 575 Madison Ave., New York, N.Y. 10022.

MAY 30-31, SAN FRANCISCO — Managers' Roundtable. Contact: Systems Technology Forum, 9000 Fern Park Drive, Burke, Va. 22015.

WEEK OF JUNE 2

JUNE 2-5, DALLAS — American Bankers Association's 1985 National Operations and Automation Conference. Contact: American Bankers Association, Communications Group, 1120 Connecticut Ave. N.W., Washington, D.C. 20036.

JUNE 3-4, BOSTON — Fundamentals of Data Processing for Administrative Assistants and Secretaries. Contact: New York University School of Continuing Education, 575 Madison Ave., New York, N.Y. 10022. Also being held June 20-21 in San Francisco and June 27-28 in Los Angeles.

JUNE 3-5, MONTREAL — Canadian Information Processing Society Congress '85. Contact: Canadian Information Processing Society, Fifth Floor, 243 College St., Toronto, Ont. M5T 2Y1, Canada.

JUNE 3-5, SAN FRANCISCO — Long-Range Information Systems Planning. Contact: American Management Associations, 135 W. 50th St., New York, N.Y. 10020. Also being held June 17-19 in Boston.

JUNE 3-6, CHICAGO — IMS/DB (DL/1) Application Programming. Contact: Technology Solutions, Inc., 520 Fifth Ave., New York, N.Y. 10036. Also being held June 24-27 in Washington, D.C.

JUNE 3-6, CHICAGO — Vtam: From Start to Finish. Contact: Technology Solutions, Inc., 520 Fifth Ave., New York, N.Y. 10036. Also being held June 17-20 in Boston and Atlanta and June 24-27 in Los Angeles.

JUNE 3-6, FORT LEE, N.J. — CICS/VS MRO/IRC. Contact: Technology Solutions, Inc., 520 Fifth Ave., New York, N.Y. 10036. Also being held June 3-6 in Los Angeles. June 17-20 in San Antonio and June 24-27 in Fort Lee, N.J.

JUNE 3-6, DENVER — Vtam: Its Structure and How to Use It. Contact: Technology Solutions, Inc., 520 Fifth Ave., New York, N.Y. 10036. Also being held June 10-13 in Fort Lee, N.J.

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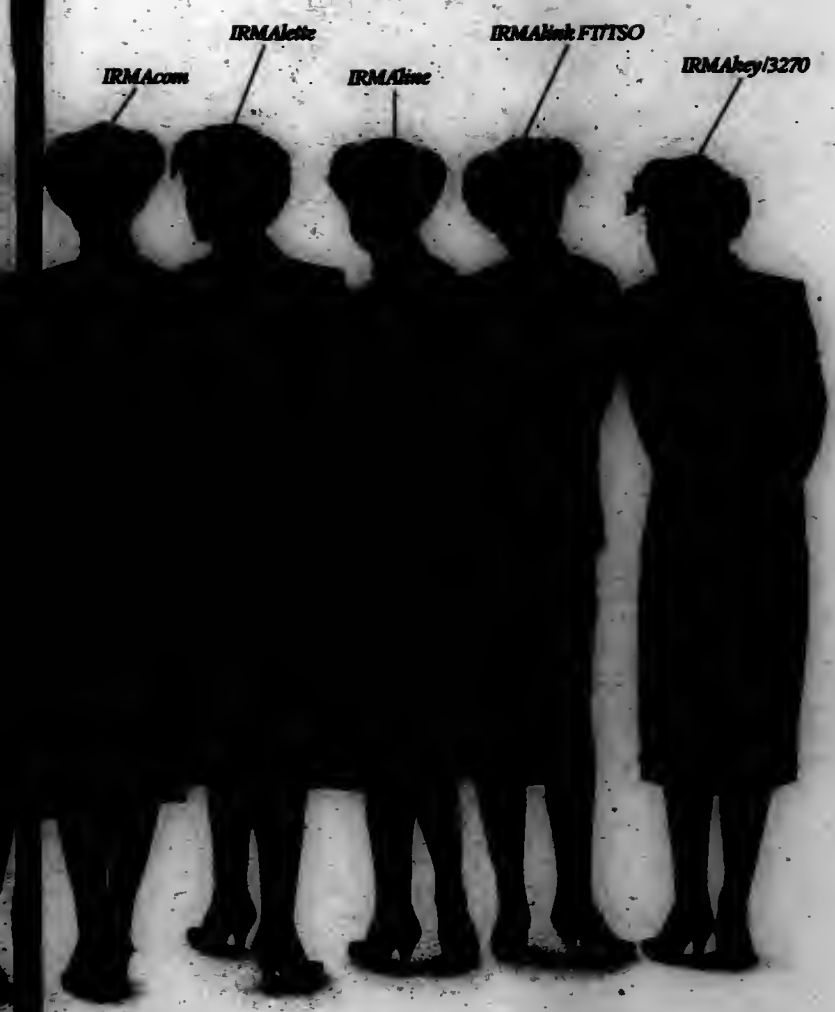

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EDITORIAL

Japan blinks

The doors to the lucrative Japanese telecommunications market are opening, but not wide enough nor quickly enough to satisfy the trade expectations of the U.S. Congress or the U.S. telecommunications industry.

At stake is Japan's $4.5 billion telecommunications market. It is turf the Japanese want to protect and the Americans want to attack. Threw in the wave of protectionist sentiment sweeping through Congress, and the scenario has all the explosive ingredients of a nasty little trade war — unless one side blinks, and Japan has.

Telecommunications is only one market of four key areas that dominate this latest round of U.S.-Japan trade talks. The others are medical equipment/pharmaceuticals, electronics and wood and paper products.

Talks in all areas recessed late last month except for telecommunications. U.S. negotiators had hoped to conclude the telecommunications talks by April 1, but they will likely continue as Japan steps up its effort to resolve disputes before the annual seven-country economic summit next week in Bonn.

Much intense negotiation has taken place amid mounting trade frictions and under the watchful eye of Congress. Japan clearly fears that Congress is in the mood to restrict Japanese imports unless Tokyo moves quickly to open up its markets for U.S. goods and to reduce fees, licensing requirements and other obstacles that prohibit expansion of U.S. industries in Japan. In short, Congress wants Japan to give the U.S. the opportunity to close its $37 billion trade deficit with that country. Or, as summed up by Secretary of State George Schultz: "We want to hear the cash register start ringing."

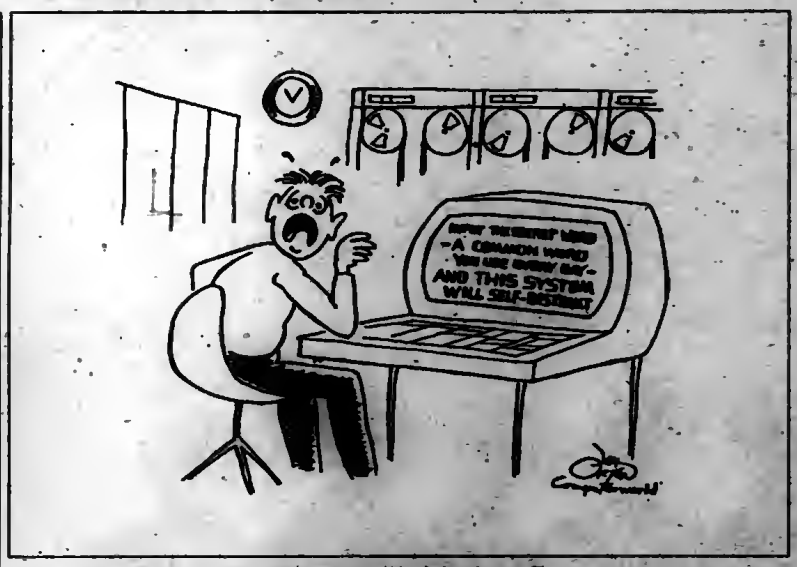
In the telecommunications area, Japan recently has taken the following steps to reduce tension with the U.S.:

- Simplified standards and regulations that American imports must meet in the Japanese market.
- Allowed foreign telecommunications companies to participate in establishing standards for telecommunications equipment.
- Enhanced protection for U.S. patents and copyrighted software.

These measures — and other concessions expected in the electronics and medical equipment/pharmaceuticals industries — have been greeted coolly so far by U.S. legislators, who have called them unspecific and meaningless. Much more progress must be made much more quickly, they said.

The American telecommunications industry, which experienced a trade deficit of about $2 billion with Japan last year, does not appear to have found much solace in Japan's moves. Japan's pledge to open up its domestic markets generally received mixed reviews from U.S. trade associations representing high-technology companies [CW, April 15].

But cautious optimism remains. "Clearly," one industry representative said, "you can't change an entrenched system overnight."



'Logic bomb squad! Logic bomb squad!'

LETTER

Programmers work as problem solvers

Lowell Jay Arthur's proposed metrics for program quality and programmer productivity that he expressed in a recent interview [CW, April 1] are out of step with the role of the programmer in the 1980s.

Quantitative measures of program size and complexity might have helped in evaluating the efforts of coders. Today's programmer, however, is more a problem solver than just a technician grinding out program statements from painfully detailed "specifications." The organizations that have had the greatest success in raising the levels of quality and productivity are those in which the programmer's problem-solving function is recognized and nurtured.

If there was ever a need for the pure coder, the widespread acceptance of structured disciplines in the 1970s certainly put an end to it. An organization that follows sound practice in all phases of program development need not fear losing control of a project during coding and testing or getting stuck with a new maintenance nightmare. In the 1980s, the growing availability and acceptance of higher level tools such as fourth-generation languages are continuing the trend toward a more responsible, solution-oriented role for the professional programmer.

We must encourage and reward the avoidance of large, complex programming efforts. Our programmers should exercise their ingenuity in solving users' problems quickly and by simply using the appropriate tools and techniques. Once they develop a solution, they must not rebuild it from

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VIEWPOINT

Robot pipes technology into the beaux arts

LECHT ON SCIENCE
Charles P. Lecht

He was poised before a triple-keyboarded organ when I first saw him. It was late afternoon and rays from the setting sun streamed into the performance hall through its 50-ft windows, causing his stainless steel parts to sparkle and glisten. He sat motionless, surrounded by the equipment needed to energize the organ and he himself. Around the power supplies, synthesizers, speakers and other components was a railing. Behind the railing a large audience gathered — many of whom whispered words of disbelief at what they were witnessing.

Except for his generally human shape, no attempt was made to employ the customary, expected cosmetics to deceive the eye to make us believe robots are real persons. Before his performance was over, all in attendance had come to believe that a living soul might inhabit the wired network and metal frame called "Wasubot."

Wasubot is a Japanese-made robot. When I saw him perform at the Japanese Government Pavilion at Expo '85, the science exposition currently being held in Tsukuba, Japan (CW, March 4), Wasubot actually read and played organ music. The video lens eye on his head was fixed to gaze at the sheet music set on a stand above the organ in the traditional manner. He stared at the music as a child might during a school performance — a child who had just learned to play and was determined to give a flawless recital.

Wasubot's head — essentially a featureless metal case about the size of a lunch box — was bolted to a neck of steel by cable and rigidly affixed to his incredible torso. His upper and lower arms — independently suspended steel rods welded to ratcheted gears and wheels — were capable of the kind of forward, backward and lateral motions needed to play the organ. These mechanisms provided Wasubot the requisite position shifts and the strength to hold a particular position while his steel hands — with ball joints and socketed finger rods — gently tapped the organ's keyboard.

His right foot rested on the sound-dampening pedal far to the rear of his organ's console, and the left fell directly to the bass octave pedals. The latter foot was skewed to the right in a position you'd would expect from an organist who was about to sound an impossibly deep bass (the sound you might hear in a cathedral at the opening or closing of a fugue).

> *Emulating motions of man when he is engaged in purely artistic pursuits (like playing the organ) is, relatively speaking, new. Wasubot provides us with hope that more such robot uses may be in the making.*

Although most of Wasubot's parts were contained within his 8-ft frame, a great deal of his cabling hung or was strung outside of him. The mechanical veins and arteries that flowed from the back of his metal cranium sent signals to his legs, feet, arms, hands and fingers. His fingers were longer than needed, so that when he moved, they resembled an ever-changing cage of cabling groups fastened at his joints.

Robotlined repertoire

For Wasubot's performance, bright spotlights were placed behind and above his shoulders. Their beams were trained upon his sheet music so that his eye could discern the notes and so that his processor could perform the pattern recognition unhampered by variations in natural lighting or those from the flashes of the crowd's cameras.

A Japanese girl placed sheet music on the stand before Wasubot — music in the same form known and played by organists throughout the world. She greeted Wasubot, who responded with a synthesized, "Good afternoon," followed by an announcement of his intention to play the pieces before him. He had already read the entire score, shipped it to his memory, processed it and stored the pattern of play in an output buffer. (Then he "learned" the musical piece faster than any human being could.)

His hands and feet slowly slid to assume their sitting position. His fingers deftly maneuvered across the keyboard and organ music began to fill the hall. The audience was dumbfounded: He was not only playing the music, but his body parts were responding to the melody, as we might expect a human's body to respond. The observers' camera flashes came to an abrupt halt, as if they were feeling the same shame they might in any concert hall.

Awkward clapping began when Wasubot finished his piece. Although the applause was brief and there being it felt a bit foolish, everyone agreed that something very special had occurred.

So what's so special?

A robot that reads and plays music is significant enough to evoke such awe, but we've heard better performances. Wasubot's robotic movements were a marvel, but other recent robotic feats like assembling cars or delivering mail have impressed us as much. So what's so special about Wasubot?

Wasubot was used to create art. Compare the use of robotics for industrial purposes with use purely for artistic value. Emulation of the motions of the human body in the former category goes as far back as we care to consider — the battering ram and the loom provide us with examples enough. But emulating motions of man when he is engaged in purely artistic pursuits (like playing the organ) is, relatively speaking, new.

Wasubot provides us with hope that more such robot uses may be in the making. We cannot underestimate the value of robotics to help us off-load the often dehumanizing but necessary processes we must execute to survive. But survival isn't everything. The use of robotics in artistic expression provides us with a powerful new means to further obtain its humanizing benefits.

Lecht is chairman of Lecht Sciences, Inc., a New York-based think tank specializing in computer and communications technologies.

Earning a 'good company' status staves off user piracy

READER'S PLATFORM
Gary Norod

Pirates have been with us for centuries. But only recently have many people been given the opportunity to try it out for themselves. Most of these 20th-century pirates are basically good people who rationalize their activities by telling themselves that most software companies are not "good" companies.

If you can convince the public that you're a "good" company, the public will not steal from you. Because a large part of being a "good" company lies in responding to consumer complaints, the following list of complaints stands here for the industry's consideration.

■ Most buyers consider software too expensive. Part of that feeling is intuitive, but part of it is based on historical expectations. Consumers expect new products to cost more — but they also expect prices to drop rapidly as products become established. When popular software packages do not decline in price until competitive products force them to, buyers get the feeling that the producers are greedy and deserve to be ripped off.

Software publishers could reduce prices. According to figures in the book *Future Forces: An Association Executive's Guide to a Decade of Change and Choice* (American Society of Association Executives, Washington, D.C.) by Gregg Edwards and David Pearce Snyder, fewer than 5% of software firms use the productivity development technology available to them 15 years ago and less than 5% of that group has introduced anything new.

In addition, advertising expenditures have risen dramatically, and probably excessively, since the spectacular success of Lotus Development Corp. But large advertising budgets are an arguable path to success. Numerous software firms have done quite well on limited or nonexistent advertising budgets. At the very least, these budgets should get scrutinized more closely than they apparently do.

> *Fewer than 5% of software firms use the productivity development technology available to them 15 years ago and less than 5% of that group has introduced anything new.*

■ Software consumers would like more variety within given product lines. After all, some buyers are penny conscious; others are less concerned about prices. Software publishers could and should offer more of a choice in products and not just more products from which to choose.

For example, by offering budget-conscious buyers simple models of popular packages and selling additional power, user-friendly interfaces or other convenience features separately, producers could give customers more of a choice. This would result in a wider audience for any given product and happier buyers. Happy buyers would be less likely to give away the products of companies with which they are pleased and to whom they feel a sense of loyalty.

■ Buyers want better documentation, but they aren't getting it. For example, two popular microcomputer products come with manuals in which the tutorial and reference functions are inexplicably combined. Can it be that the publishers simply don't know how badly that practice works, or are they just trying to cut corners? No matter. Buyers want bet-

See PIRACY page 38

Norod is a software consultant based in Austin, Texas.

PIRACY from page 37

ter instructions and it should be easy to accommodate them. Besides, documentation is a wonderful investment — it adds value to a product, makes owning original copies more desirable than owning illegal copies, costs little to produce and is almost impossible to pirate.

■ Customers hate copy protection. The 1978 U.S. Copyright Act specifically gives the purchaser of a copyrighted work the right to use it as he or she wishes, and the buying public knows this. Despite protestations to the contrary, users know that copy protection doesn't work, and manufacturers that use it make them mad. Smart software publishers are beginning to get the message. It is hoped that others will catch up soon.

■ Software buyers believe that software companies are too restrictive in their licensing. Users tend to view software products in much the same way as they view other intellectual properties; they think that any "single-thread" usage should be acceptable, and it is unlikely that they will change their minds soon.

The attitude of "one copy, one user, one machine" is unrealistic and unworkable; it contributes to public perceptions that software companies are avaricious. It is psychologically easier to steal from "avaricious" companies than from "good" ones.

■ Businesses believe that much more liberal provisions should be made for site licenses. In the real world, expensive intellectual properties must be shared among employees in much the same way other costly resources are shared. Software developers should recognize and attempt to meet that need as well. Perhaps by selling first copies with aggressively priced site licenses, software companies could derive real revenue from copies that are currently being made illegally. Industry precedents suggest that most companies may be relied upon to stay honest — as long as it is not too expensive or inconvenient for them to do so.

These are the basic complaints. Software developers who work to resolve them will earn themselves goodwill as well as greater profitability. The much-talked-about industry shakeout will surely take care of the rest. ‡

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LETTER from page 36

scratch for every similar problem. In a modern professional environment, measurements oriented to highly repetitive coding tasks are at best irrelevant and at worst harmful.

Arthur is right, of course, in asserting that we have to evaluate both the quality of the end product and the productivity of the problem-solving process. Rather than counting the IFs and the PERFORMs, however, we need to assess the effectiveness and the timeliness of the problem solution. Rather than counting the number of modules and the number of statements in each module, we should try to determine whether a given module performs a well-defined function, whether its scope is too specific or too general and perhaps whether it was needed at all. Rather than counting the GOTO statements or the ratio of comments to code, we ought to assess a program's clarity, its lack of unnecessary repetition or redundancy and its subordination of detail.

Although some of the things we'll have to measure are hard to quantify and harder to automate, they all can be evaluated in a straightforward way by knowledgeable professionals. Because the effort required to perform these evaluations is small in comparison with the programming effort, the cost of making the evaluations, even if primarily done manually, will be repaid many times over by the benefits.

Conrad Weisert
Chicago

"To liven up the party George brought along his personal computer!"

SOFTWARE & SERVICES

Magec works program trick

By Shawn Hallaway
CW Staff

DALLAS — Dissatisfied with the applications development tool in use at Natural Resource Management Corp. (NRM) here, Theodore Polzrte decided to try a little magic.

As vice-president of systems operations for the oil and gas investment company, Polzrte has been monitoring NRM's conversion to Al Lee & Associates, Inc.'a Mask and Application Generator and Environment Controller (Magec). NRM's management decided to switch to Magec after the company discovered the applications development product it had been using was not really what it needed.

Two years ago, NRM began using Martin Marietta Data Systems, Inc.'s UFO to develop on-line applications for a newly installed IBM 4341 Group II mainframe running MVS, according to Grover Sherlin, manager of revenue applications. Sherlin's department hoped to use UFO to develop programs to update master files of oil properties and purchases.

But generating UFO transactions for on-line file maintenance of the batch-entry revenue accounting package "took quite a bit of time," Sherlin said. "We

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Dispatches from front: MSA link users speak

By John Desmond
CW Staff

In December 1982, Management Science America, Inc. (MSA) was reportedly the first mainframe software vendor to enter the micro-mainframe link market when it announced its Peachlink product [CW, Dec. 20, 1982].

Since then, MSA has sold off most of its failing Peachtree Software, Inc. acquisition and Peachlink has been given a new name — Expert Link. *Computerworld* talked to two of the approximately 300 customers that MSA said have purchased Expert Link, which runs on the IBM Personal Computer and provides a communications link to MSA's mainframe applications.

Richard Peirce, manager of financial systems corporate accounting for Life Investors, Inc., an insurance holding company and investment firm in Cedar Rapids, Iowa, said the firm bought Expert Link 16 months ago when the product was called Peachlink. Peachlink was then sold as part of MSA's Executive Peachpack micro software, which the company no longer markets.

Life Investors runs an IBM 3033 mainframe under OS with IBM's CICS teleprocessing monitor, under which the Expert Link user functions operate. The company is using Expert Link to download data from MSA's general ledger system to only one IBM Personal Computer, a limitation imposed while the link is being assessed, Peirce said.

Peirce said Life Investors encountered a problem with CICS being tied up whenever data was downloaded from Release 21.7 of MSA's general ledger package. The problem slowed the system down and, in a few cases, even caused it to crash. Systems programmers would occasionally have to be canceled off the system until CICS

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- RM/Cobol for IBM's System/36 under SSP is out from Ryan-McFarland/49
- Gould Semiconductor, Mentor Graphics announce gate array design software/49
- System Software Associates enhances its applications for IBM System/36 and 36/42

[redacted]

Systems Software/61

Too many tools spoil center

SOFTLINE
Steven Pirenzinger

If you're looking for a productivity tool for the development center, you don't have to look far. The market is full of vendors and products claiming to have the answers to increased productivity for developing production applications within, or under the influence of, the development center. Although the products may provide some of the answers, their proliferation within the development center, would quickly limit its effectiveness, as has happened in the information center.

The numerous challenges of selecting programmer-oriented productivity tools for the development center are different from those faced by the user-oriented information center. Information center management had to select tools that would be effective in building ad hoc and quasi-production applications. Its decisions often resulted in the selection — and proliferation — of numerous end-user tools.

Why was it necessary to buy so many tools? The answer was simple: Each tool provided a different, specialized function, and numerous functions were required. None of the products could deliver all the required functions and features neces-

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Pirenzinger is president of IMS Consulting, Inc., an Encino, Calif.-based consulting firm that specializes in IBM's IMS DB/DC and CICS/DL/1. He has 15 years of data processing experience and is a regular contributor to Softline.

Software AG adds E-mail, other aids

RESTON, Va. — Software AG Systems, Inc. has announced Mail/Connection electronic mail software for use with its Adabas data base management system.

The company also announced the Adabas Continuous Processing Option (CPO), a version of Adabas designed to deliver 24-hour data base availability, and Review, a resource tracking and auditing system for Adabas and Software AG's Com-Plete transaction processing system.

According to a spokesman, Mail/Connection is said to provide storage and retrieval capabilities for messages through integration with Adabas. Features of Mail/Connection include program function key orientation, full screen editor and micro-mainframe link. Using Software AG's Natural/Connection micro-mainframe link, users can now send and receive electronic mail messages through personal computers.

Mail/Connection can be accessed through IBM 3270-type terminals or IBM and compatible microcomputers using Natural/Connection. Mail/Connection is priced at $10,000 for IBM's DOS operating system, $15,000 for VS1 and VM and $20,000 for MVS.

See MAIL page 46

ght

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Gould, Mentor Graphics unveil gate array software

SANTA CLARA, Calif. — Gould AMI Semiconductors, a division of Gould, Inc., and Mentor Graphics Corp. have jointly announced a software product that is said to allow systems engineers to complete a gate array design process — from schematic entry through simulation and physical layout — using a workstation in their own environment.

Using Mentor Graphics' Gate Station, systems engineers use Gould AMI macro libraries to design gate arrays ranging from 1,000 to 4,000 gates in the 3-micron double-layer metal process. The Mentor Graphics software coupled with the Gould libraries allow schematic capture, logic simulation, automatic physical layout and back annotation and verification during the design process. The information is then sent on to Gould for fabrication, a spokesman said.

The software from Mentor Graphics includes modules for schematic entry, simulation, automatic physical layout and add-delay function. The prices range from $12,000 to $65,000 for the entire package depending upon host. The software runs on Apollo Computer, Inc. workstations ranging from the DN300 to the DN660, under Apollo's Aegis operating system.

The Gould libraries cost $600. More information on the entire system is available from Gould AMI, 3800 Homestead Road, Santa Clara, Calif. 95051.

System/36 gets RM/Cobol

Supports native SSP, IBM RPG data files

ROLLING HILLS ESTATES, Calif. — Ryan-McFarland Corp. has announced that its RM/Cobol programming language is now available for IBM's System/36 Models 5360 and 5362 under SSP, the minicomputer's native operating system.

The System/36 implementation runs under the most recent release of SSP and on earlier versions. According to a Ryan-McFarland spokesman, the implementation supports SSP data files, so that files created by System/36 utility programs and by other languages on the computer such as RPG can be used in RM/Cobol applications.

RM/Cobol file I/O is said to be efficient because SSP file handling features are built into the System/36. The spokesman said an RM/Cobol benchmark program executes nearly twice as fast on the System/36 as it does on the IBM Personal Computer AT and three times as fast as on the Personal Computer XT.

Through an arrangement with IBM, the System/36 implementation of RM/Cobol will be manufactured, supported and marketed by IBM, the vendor spokesman explained. Licensed applications developers can obtain development systems and runtime integration rights from Ryan-McFarland.

Cross-compilation

In addition to the System/36, IBM processors that run RM/Cobol include the 4300, 3030 and 3080 mainframes under VM/CMS, the Series 1 under AT&T's Unix and the Personal Computer under IBM's PC-DOS and Digital Research, Inc.'s CP/M 86. RM/Cobol-based software can be cross-compiled in any of those environments for use in any other, the spokesman said.

The System/36 RM/Cobol compiler and runtime module is priced at $1,000, and the runtime component alone is priced at $400. The products are scheduled to be available in June, the spokesman said.

Ryan-McFarland is located at 609 Deep Valley Drive, Rolling Hills Estates, Calif. 90274.

Data Kinetics releases DBMS with automatic table handling

OTTAWA — Data Kinetics Ltd. has announced a data base management system with an automatic table handling system for IBM mainframes running MVS and DOS operating systems.

Operating independently of application programs, the Tablebase DBMS stores data in a central library of tables outside the programs, a spokesman said. When changes occur, new entries are input only to those tables affected. Users reportedly can create, access and maintain tables on-line, independent of the programs that use them.

Different tables may be stored in the same library, and table updating can occur while multiple reads are taking place.

Tablebase components include an end-user environment that provides table definition and maintenance for CICS and IBM's Interactive System Productivity Facility, a batch facility and an access facility.

The product can be used with most commercial programming languages, including Cobol, Fortran and PL/I.

The product costs $35,000 for MVS and $15,000 for DOS.

Data Kinetics is located at 97 Norman St., Ottawa, K1S 3S5, Ont., Canada.

Fischer-Innis announces version of productivity aid for TSO users

NAPLES, Fla. — Fischer-Innis Systems Corp. has announced Release 5.0 of its Interactive Output Facility (IOF), a productivity aid for use in IBM JES2 TSO environments.

Release 5.0 enhances users' ability to manage JES2 output under MVS/TSO, a vendor spokesman said. The IOF's display panel reportedly allows users to review JES2 batch jobs and their output.

IOF Release 5.0 is said to allow TSO users to select jobs for review based on an expanded list of criteria, including input and output class, destination, forms and writer name.

Both input and output job characteristics can be modified on the IOF panel, the spokesman said. An added panel is said to display input queue statistics, including queue length, job class and priority. Another panel allows for easier definition of data sets for snapshot output, in which a selected portion of data is extracted so it can be printed without affecting the original job.

Release 5.0 increases the number of Interactive System Productivity Facility (ISPF) variables saved for each user in the ISPF profile, the spokesman said.

Stored variables are said to include scrolling options, condense and compress specifications and default IOF job selection criteria. For snapshot and print data sets, users reportedly may save programmer name and JES2 line count. Additional job access routines enable systems managers to specify who may use certain IOF facilities.

IOF Release 5.0 is available for a monthly lease fee of $250.

Fischer-Innis is located at 4175 Merchantile Ave., Naples, Fla. 33942.

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SYSTEMS SOFTWARE

■ MacKinney Systems has announced CICS/CICS Enhanced Master Terminal (CICS/CEMT) for IBM's MVS. The product was previously available only for IBM's DOS.

The MVS version of CICS/CEMT reportedly provides for the allocation of files to IBM's CICS from a batch partition. It also provides verification that the function was successful. Other product functions allow the user to start a task at any CICS terminal or run a CICS program from a batch job and issue a NEWCOPY command to CICS automatically after successful completion of a program.

CICS/CEMT also allows CEMT commands to be passed to a CICS system running on another CPU or virtual machine. The product reportedly allows up to five CICS systems to be defined.

CICS/CEMT is priced at $495 for a perpetual license and $195 for an annual license.

MacKinney Systems, Suite 113, 2874-A S. Glenstone, Springfield, Mo. 65804.

■ Davis, Thomas and Associates, Inc. has announced DTAICCF, which allows users of IBM's ICCF to run a CICS transaction while logged on to ICCF. The software runs in IBM OS environments.

A spokesman said DTAICCF can be used in the command mode or full-screen editor mode of ICCF without disrupting current ICCF activity to run CICS transactions external to ICCF.

DTAICCF is priced at $1,800, plus $225 per year for maintenance after the first year. Lease price is $80 per month.

Davis, Thomas and Associates, Suite 301, 8000 Highway 7, Minneapolis, Minn. 55426.

■ Candle Corp. has announced CL/Menu, an applications menu facility that replaces traditional IBM Vtam screens with menus. CL/Menu runs under IBM's MVS and MVS/XA operating systems.

According to a spokesman, CL/Menu replaces the traditional "Welcome to Our Network" screen with a menu showing available applications

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RAMIS II Seminars

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Hartford, CT	May 1
King of Prussia, PA	May 23
McLean, VA	May 9
Miami, FL	May 8
New York City, NY	June 12
Philadelphia, PA	May 14
Pittsburgh, PA	May 16
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SOFTWARE & SERVICES

SSA unwraps enhanced BPCS for IBM System/38, 36

CHICAGO — System Software Associates, Inc. (SSA) has announced enhancements to its software packages for manufacturing, distribution and financial applications on the IBM System/38 and System/36.

Business Planning and Control System (BPCS) 38 Version 2 for the System/38 has enhancements for production planning control environments, a spokesman said. Version 2 supports order entry, planning and control and customer shipment. Among new functions are planning bills of material, order entry features and options, two-level master production scheduling and final assembly scheduling.

BPCS 38 Version 2 is written in RPG-III and reportedly uses all data base and productivity features of System/38. Prices for BPCS Version 2 start at $52,000.

SSA also announced BPCS 36 Advanced Manufacturing Software for the System/36, with enhanced functions for the manufacturing environment, similar to those offered by the BPCS 38 Version 2.

BPCS is written in native System/36 mode, RPG-II, and is said to use all data base and productivity features of System/36. Prices for BPCS 36 Advanced Manufacturing Software start at $25,000.

SSA also announced BPCS 36 Process Industries, Version 2 software for the System/36, with enhancements to the areas of product cost and lot control.

BPCS Version 2 now allows up to nine user-defined cost fields for each item for tracking production costs in quality control, quarantine, fixed and variable overhead and specialized use of material.

The feature is intended to address all product costing and analysis needs of process industries such as pharmaceuticals, chemicals and food processing.

BPCS 36 Process Industries Version 2 includes expanded capacity permitting allocation of product lots to customer orders on the finished-goods level, and allocation of raw material to orders on the manufacturing level.

BPCS 36 Process Industries Version 2 is written in native System/36 mode; prices start at $25,000.

System Software Associates is located at 200 W. Madison, Chicago, Ill. 60606.

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and their status. CL/Menu reportedly improves communications by allowing system status to be displayed on the menu. Users are returned to the menu if an application becomes unavailable while in use.

With an electronic bulletin board feature, the data center can notify users of scheduled interruptions in service or other items of interest. CL/Menu is scheduled to be available in the second quarter. The permanent license fee for CL/Menu is $7,500.

Candle, Suite 2404, 10850 Wilshire Blvd., Los Angeles, Calif. 90024.

■ The Cambridge Systems Group, Inc. has announced that its ASM2 Standalone Restore (SAR) facility is now available for IBM's MVS/XA. ASM2 is a disk space management system.

ASM2's Standalone Restore version 3.0.1 is said to be able to restore, in a standalone environment, system volumes that have been lost or damaged. Standalone Restore uses ASM2's full-volume dump/restore facility.

The price for version 3.0.1 of ASM2's SAR facility is $19,500.

Cambridge Systems Group, 24275 Eliso, Los Altos Hills, Calif. 94022.

■ Value Software, Inc. has announced Release 11.01 of Vmmanager, formerly known as Data Center Management System, for automating production control activities in a data center. Vmmanager runs under IBM's MVS and MVS/XA operating systems.

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sary to meet the information center's needs, such as ad hoc queries and reports, statistical information, spreadsheets, data base extracts and business graphics.

Are we faced with the same dilemma of selecting too many tools for the development center? The answer is no. The requirements for development center productivity tools are such that one or two tools will provide all the functions, features and performance required.

The system must be useful for building performance-oriented, predefined applications built around a data base management system. The format and content of screens and reports are well defined in advance, along with data models and applications logic requirements. These characteristics are obviously different from those in the information center.

Also, the decision to use one tool for a one-time or quasi-production application is less significant than the choice of a development center tool for building a major production application that will be used and maintained for many years.

Restricting use

Development center tools currently available can adequately address 95% of the predefined applications waiting to be built. If a development center can restrict the number of tools in use, it can realize tremendous savings in development, maintenance and training costs. Such a restriction also provides an opportunity for standardization within the production development environment.

The difficult part of selecting a single tool for the development center is recognizing that it is a strategic, long-term decision, not a tactical, short-term one. As a rule in software evaluation, tactical decisions are easier and less risky to make than strategic ones.

A tactical approach would have you buying another tool for every new or different requirement. Experience is proving, however, that the individual benefits of numerous tools are almost always offset by the burden of training, maintenance and support. The architectural differences that often exist between tools are an additional hindrance to systems integration.

Strategic decision

What is the answer? Make a strategic decision to evaluate and acquire a productivity tool that can be used to build 95% of development center applications. This is the toughest decision because it requires a commitment to select and implement a tool that could affect the entire DP organization.

A major benefit of this wide-ranging impact is that productivity gains can now be realized by the majority of DP personnel within a consistent and manageable framework. The strategic decision requires that the selected productivity tool have the following minimum characteristics:

- Integrated on-line, batch and report writing functions.
- Features usable by multiple skill levels.
- A minimal learning curve.
- A screen image painter to generate the native screen source statements.
- A nonprocedural field-edit logic capability.
- An early prototyping feature usable soon after screen design.
- High-level commands or macros to simplify native data base and data communications interfaces.
- Features ensuring that developers generate standardized source code.
- A facility for leveraging senior developers with a command or macro writing feature for building reusable code.
- No significant design restrictions that limit architectural functions.
- High-performance processing capability.
- An import facility from existing data dictionaries.
- Automatic documentation generation capabilities.
- No runtime package that would affect portability to multiple CPUs.
- An integrated dictionary facility to control screens, reports, programs, data bases and other components.

The benefits to controlling productivity tools within the development center are significant. Take the time to make the strategic decision during selection, and the entire organization will reap the benefits.

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returned to normal, he said.

Since MSA provided a fix to general ledger Release 21.7, the problem has not recurred, Peirce said. At MSA's Interact users group meeting in New Orleans recently, Peirce said, MSA representatives assured users that Release 21.9 of general ledger, scheduled to be announced this fall, will work more efficiently with Expert Link.

For the future, Peirce said his firm is preparing a project involving the use of micro spreadsheet software to prepare departmental budgets. The budgets would be uploaded to MSA's Easy Plan budgeting tool on the mainframe, which is said to update MSA's general ledger budget master files.

While Peirce said Life Investors is satisfied with Release 4.2 of Expert Link, the company also recently bought a copy of Panoptic Systems, Inc.'s Panlink micro-mainframe link package. An advantage of Panlink, according to Peirce, is its ability to access multiple vendors' mainframe software.

Commercial bank's usage

Fidelity National Bank of Baton Rouge, La., a commercial bank with 19 branches and $750 million in assets, has been using Expert Link for two years.

Susan J. Babin, assistant vice-president and account manager at the bank, said Expert Link has been used to download data to micro spreadsheet software for report generation. The bank ties three IBM Personal Computer XTs to its IBM 4341 mainframe using Expert Link.

Fidelity National is using the link as an aid in budgeting, which Babin described as a nightmare at the bank. Branch managers enter a proposed budget on a diskette, which is forwarded to the accounting department.

If the budget checks out, accounting uploads it to Easy Plan on the mainframe. As a security measure, all uploading and downloading is done by the accounting department.

Link goes down with mainframe

A drawback of Fidelity's link, Babin said, is that when the mainframe goes down, the link goes down. To combat the problem, the bank plans to use Expert Link to download an account cost-center reference file to a micro.

The reference file will be used to validate transactions during the day. At night, the mainframe data base will be updated in batch mode.

The only disadvantage Babin cited of not being on line is the inability to process a new account, but she said most accounts are not opened in one day. An advantage of being off line, she said, is the "freedom from worrying about whether [or not] the mainframe is down."

Since obtaining Expert Link, Fidelity has added four branches and several financial services but has not had to add staff. "We have more to do [but] have taken up the slack with the micros," Babin said.

At the Interact meeting, an MSA spokeswoman said the company will announce a series of distributed personal computer applications to allow reference data bases to be downloaded from MSA mainframe applications to IBM Personal Computers via Expert Link.

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According to a vendor spokesman, Release 11.01 of Vmmanager includes on-line job tracking across multiple processors and increased data set scheduling and job forecasting capabilities.

The latest release also includes XA support for its JCL Validation feature.

An enhanced Vtam communications feature called Vtam Bridge can be used for on-line job tracking in addition to the normal Vtam communications support.

Vtam Bridge is also said to eliminate the need for a shared Dasd environment, and it supports Vmmanager on up to 20 CPUs.

The data set scheduling feature of Vmmanager can now accommodate up to 600 data sets recorded on the master list.

According to the vendor, the forecasting capabilities of Vmmanager have been enhanced to produce a forecasted schedule of the data center's work load for 2,400 jobs in a 30-day period, 4,800 jobs in a 15-day period or 9,600 jobs in a seven-day period.

Vmmanager, Release 11.01, is priced at $64,000.

Velos Software, 400 N. Kings Highway, Cherry Hill, N.J. 08034.

■ Automotive Computer Extensions, Inc. (ACE) has added support for SAS Institute, Inc.'s SAS/Graph plotter to its ACX-PM Printer Manager for IBM mainframes running under VM.

According to a vendor spokesman, Graf-ACX Graphics Manager allows SAS/Graph users to share plotters and perform spooling functions. It also allows users to print multiple plots per page.

The product allows continuous- and noncontinuous-feed asynchronous Ascii plotters to be managed by ACX-PM.

With ACX-PM, the plotters are automatically shared by all CMS users without system operator intervention, according to the vendor spokesman.

Graf-ACX generates charts, plots and presentation graphics. Plots can be produced from any local, remote or dial-up CMS terminal, the vendor said.

ACX-PM Base Printer Manager sells for $5,000. Graf-ACX sells for $2,000.

Automotive Computer Extensions, 5120 Belmont Road, Downers Grove, Ill. 60515.

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The product is available immediately.

The Adabas/CPO is said to ensure data base resource availability despite peripheral hardware failures. Adabas/CPO automatically detects and recovers from I/O errors, providing transparent read/write access to current backup data in the event primary data becomes inaccessible.

The Review tracking and auditing system can be used to provide billing for use of data base and teleprocessing resources. Review provides facilities for generating the summary, detail and exception reports needed to manage capacity, to account for system usage, to tune for performance and to detect abnormal or unauthorized activities.

Review is supported under IBM's MVS/XA, MVS/370, VS1 and DOS/VSE operating systems. Adabas/CPO is available for MVS/XA, MVS/370 and VS1 environments.

Adabas/CPO is priced at $50,000 for the DOS version, $65,000 for the OS/VS1 version and $80,000 for the MVS version. Review is priced at $10,000 for all environments.

Software AG is located at 11800 Sunrise Valley Drive, Reston, Va. 22091.

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MAGEC from page 39

had seven people working for the better part of six months to update a relatively small number of master files.

"To do a simple update to one file [took] our users several days of arguing with the computer," he said. "One person [spent] a week building a transaction to do what I would regard as a fairly straightforward update."

Pohrte realized that what NRM needed was a product that used command-level Cobol and not a proprietary development language. It was his job to inform upper management of the problem.

"One of the most difficult chores was to convince management that what we had was not what we needed," he said. A presentation from Dallas-based Al Lee & Associates gave Pohrte ammunition with which to do the convincing.

When Sherlin met with Al Lee, the vendor firm's president, the pair took a UFO application that a CICS programmer had been struggling with for about a month and brought it on-line with Magec in a day and a half, Sherlin said.

"At the end of that day and a half, we were able to have an inquiry screen which allowed people to at least see in real time what was out on that purchase and sales file," he said.

According to Sherlin, Magec applications are developed on-line through nonprocedural specifications entered on a terminal screen. Magec then generates Cobol inquiry, update and browse functions from the nonprocedural specifications stored in its dictionary.

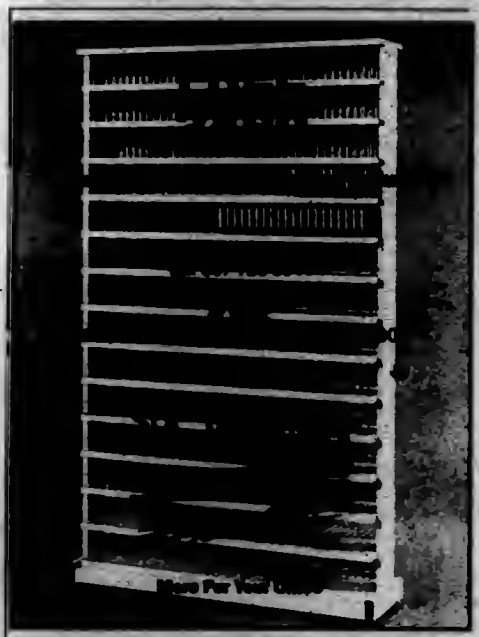
Applications can be customized by entering Cobol code directly onto the development screen, and they can be modified and regenerated without losing that customization. The product's dictionary-controlled security system governs on-line access.

One important benefit, Sherlin said, was that Magec used the same Cobol copy statement that NRM used on its batch programs. Screen editor features have also helped NRM, he said. "If you define a field and you enter a slash and two characters and another slash and two more characters, Magec assumes that it is a date field."

Sherlin said some 40 UFO applications are slowly being converted to Magec. In addition, all new applications are being written in Magec. "We've used Magec to bring up some quick-and-dirty-type screens within a matter of just three or four hours," he said. Al Lee & Associates also developed an interface to the company's Teradata data base machine.

According to Pohrte, the conversion has helped NRM maximize the productivity of its 15-person programming staff. "We wouldn't have been able to do the same things that we did in Magec with the number of people we have," he said.

"I think we ordered the wrong keyboard."



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IN DEPTH

Understanding the DP professional

A primer for the wives, husbands, friends and lovers of people who speak computerese

Part 1

By Bruce Kula

Does a decade of nested IFs evoke for you the delicate beauty of a mountain waterfall in late spring? Is there nothing in your life so satisfying as tracing a storage chain through a 300-page dump?

If you answer yes, you may presume you are not an easy person to talk to about computers. If you have spent more than a couple of years in the world of DP, it's likely you have a whole vocabulary that is incomprehensible to someone outside that world.

It is impossible to speak computerese all day, then go home and not speak it at all. Words creep into your vocabulary that used to be out of place outside a computer room. Although some bits of computer language work their way into the common language, (such as the word "computer" itself — thirty years ago the laity called any computer "an IBM"), most DP jargon remains beyond the grasp of people who don't use it constantly. There is simply too much of it.

Even two seasoned programmers can easily confuse each other: An abbreviation like CSA means a vastly different thing to an MVS programmer, a CICS programmer and a VAX programmer whose great-grandfather fought for the Army of the Confederacy.

Programmers marry crane operators, and computer operators drink beer with corporate lawyers. Users have to talk to systems analysts, and data base administrators have to talk to management. It may be that the person closest to you doesn't even have a good idea of what you do for a living, much less understand the joys and tribulations of your work.

On top of this language problem, DP is new enough to be widely misunderstood. People with a slight knowledge of computers have some notion of how prosaic work with computers can be but often lack an appreciation for the remarkable technology involved.

More often, the layman's concept of computers comes from magazine articles with titles like "House of the Future" and "Cars That Think."

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IN DEPTH/UNDERSTANDING COMPUTERESE

to improve the situation. DP professionals, like doctors and lawyers, should work a little harder at speaking English. Few people would have trouble understanding, "He programmed the computer to print calenders"; but most people would be taken aback by "He clobbered register 15 and blew away on an op exception in low core."

Patience is required, of course. Some people are as awed by programmers as they are by particle physicists, but the fundamentals of programming and particle physics are not inaccessible, if someone is willing to explain them.

If you find yourself using a technical term in conversation, stop and explain it. Acknowledging that the word is obscure is bound to be more acceptable to your listener than just using the word and acting as if he should understand it.

On the other hand, remember that DP is not considered universally an interesting topic of conversation. Choose your moments well; don't launch into a lecture on direct-access storage device architecture when your friend is discussing ergotism as a possible cause of the Salem witchcraft scare or how the Detroit Lions will do next season.

> ***You who speak computerese have to help here — tear out this article and give it to someone you love.***

This is a specialized article, designed to provide an orientation for people who do not, and may never, program, use, design, operate or fix computers. The realities of your own DP experience will be different from what I've written here; my goal is only to help you to convey those realities better. You may be astounded at what I've left out. There is room for limitless amplification and addition, which I leave to you.

You who speak computerese have to help here — tear out this article and give it to someone you love. Then stand by to guide the person over the rough spots, illuminate with examples and, most importantly, add specific detail to areas that I have carefully generalized.

To the friend of the DP professional: Between 1981 and 1990, the U.S. Bureau of Labor Statistics says, the number of people who program, operate and repair computers will increase by up to 700,000, reaching almost two million. Add in people who enter data for computers to use, those who lack extensive computer knowledge but happen to use computers frequently on their jobs and those millions who have bought their own home model.

All this is to say that you should not be surprised that you seem to know a lot of people who know computers.

You will have noticed, I think, that people who work with computers speak an esoteric language and do not exhibit much concern that others may not understand them.

This article is a sort of self-defense manual to help those who don't know (or care) much about computers to communicate with anyone who does.

You may skip over any section or ask your personal expert what he thinks would be most useful to you. The object, after all, is to permit the two of you to communicate better, not to make you an expert yourself.

I am presuming that you do not consider computers to be the most exciting subject in the world. It may encourage you to know that the author agrees with you.

Imagine you've come home after a hard day at work. You settle into your favorite chair with a glass of wine and a book. Suddenly, a crazy person explodes through the front door, ranting every bit as intelligibly as the foreman of the crew that built the Tower of Babel: "Trace tables corrupted! Command reject on SYSREF" the person shouts.

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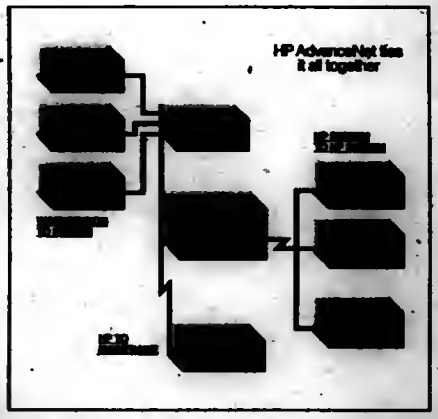

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"Did you have a bad day?" you ask.

"All I did was add one little transient to the SDLC" the person raves on, swigging copiously from your wine bottle. You carefully move costly broken objects to higher ground.

You may recognize that lunatic as the DP professional in your life. Although things may not get quite as out of control in your household (they do in mine), probably you have noticed some communication problems when it comes to talking about computers. Perhaps you don't even have a clear idea of what that individual does all day.

And it's half your fault.

Oh, I know you've been sympathetic, and sometimes listened to computerese all evening long, without understanding half of it. But that's precisely the point: when you didn't understand, you should have raised a hand and said, "Hold it, Jack!" (or Jill, or Fred or Sue, as the case might be) — "What on earth are you talking about?"

Just as your physician might unthinkingly advise you to "ingest 10 grains of acetylsalicylic acid" instead of telling you to "take two aspirins," people who work with computers sometimes forget which words in their vocabularies will not be found in a standard dictionary. It's up to the people who do out work with computers to remind the ones who do when they have strayed from the realm of comprehensibility.

> ***If you work with or live with someone in DP, both of you will have to work at understanding each other. And because the size of the DP lexicon is growing, it will be a never-ending job.***

It is possible you are less confused by people who talk about computers than you used to be. You probably have seen television programs where the hero (or, more often, villain) sits in front of a video display terminal getting at information stored in a computer system. In real life, you probably have seen a ticket agent or a bank teller do the same thing. And when a writer throws out a term like "video display terminal" you probably can visualize just the sort of thing he's talking about.

You have become, believe it or not, more computer literate than you used to be. For example: Do you ever use the word "input" — as in "I'd like to add my input to this discussion"? Were you using that word in 1970? Probably not. You have been exposed to the language of computers by the media and politicians and (of course) the people you know who know computers.

You may have heard warnings from university and government officials that people who don't understand computers will a few years from now have the same status as people who can't read today. Schools are forcing school boards and students to buy computers so the students will be prepared for a future that almost certainly will involve contact with computers.

Actually, the trend in computer technology is to design machines that anybody, with or without computer experience, can operate. The need for formal training to acquire computer literacy has already begun to decrease. Already, anybody old enough to read a simple sentence can use a well-designed computer system.

It no doubt sounds as if I am proposing arguments for not reading an article like this one. I haven't shown you the other side of the coin: The more user-friendly a computer system is, the more complex it must be. To make things easier for us (the users of computers), computer hardware and software engineers have to dig ever more deeply into their bag of technical tricks. It's very easy to design a computer that is difficult for anyone to use — and vice versa.

What this means, clearly, is that people who work in the world of data processing are going to have an even more sophisticated language all their own as the years go on, with more and more new and obscure terms. If you work with or live with someone in DP, both of you will have to work at understanding each other. And because the size of the DP lexicon is growing, it will be a never-ending job.

Is it worth the trouble? That depends on whether you wish to communicate with people in DP or merely listen to them. The purpose of this article is to give you a running start

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at the former — and presumes you are tired of the latter.

Answer A or B to the following question: the computer is a useful device primarily because of its (A) speed or (B) intelligence.

If you answered B, or were tempted even vaguely by it, it is possible you have been convinced by magazines, newspapers, films or television that computers have brains. Not so. A computer is, at its roots, only a very speedy electronic calculator. It has no innate intelligence, although some computers may be furnished with instructions and information that allows them to mimic, in a small way, human reasoning.

Bad reputation

Yet nonetheless computers have developed a terrible reputation. Bank officers blame them for losing your savings account; customer service representatives point their fingers at them when the summer issue of a magazine arrives in your mailbox just in time for Christmas. In novels and films, computers are found doing everything from taking over the world to harboring indecent thoughts about a sexy heroine.

Actually a computer is not much more likely to lose your savings account than it is to demonstrate a lust for blondes. A computer, on its own, can't lose anything. (In fact, a computer is too ignorant to make any mistake. It requires that a human define the procedures it must follow to make a mistake.) And lust, of course, is an emotion, which is something a computer will never have. But about them taking over — there's some truth in that.

There may be computers skulking about your living room (in your television or stereo) or lurking in the shadows of your kitchen (in your microwave oven) or laying in wait somewhere under the hood of your car (a new car is likely to have half a dozen).

Computers are pervading our world not because they are smarter than you and I, but because there are so many tasks a computer can do more quickly, dependably and efficiently than humans can. Let's take the problem 84,577,506 divided by 56,498. Not so bad. But try performing a million such calculations. It would take a person with average arithmetic skills a couple of years, with no breaks for eating, sleeping or sharpening pencils.

Yet the typical large computer could have the job done in a second — literally. Or let's say you've got to adjust two valves, one controlling gasoline, the other controlling air, making sure the right mixture is going into the cylinders of your car's engine.

The mix has to change according to acceleration or deceleration, the temperature of the engine and the load on the engine, and it has to change quickly and often.

Even if you could keep the valves adjusted properly (which isn't likely), you'd be bored to tears with doing it long before you reached Grandma's house. But a computer would do the job unflinchingly and perfectly for as long as it had current flowing through it.

A computer will do, mindlessly, precisely what it is told to do. Do not accept the explanation "computer error" when your checking account has an overdraft for $6 million. Tell the bank that programmers, keypunchers and computer operators make mistakes, but computers do not.

(I have to admit to one exception to this rule. It is possible for electrical or mechanical malfunctions to destroy or alter information stored in a computer. But a well-designed machine will detect a problem like this and allow a human to intervene and recover the lost information.)

The thousands of ways computers have changed our world testify to the intelligence of man, not computers. A computer that beats a human chess champion at his own game is very impressive, but what should be more impressive is the accomplishment of the person who instructed the computer; that person was either a very good chess player or a very good computer programmer — or both.

And the machine itself? A team of talented and informed people spent years designing it. (Of course, only the names of the chess champion and the computer will make the eleven o'clock news.)

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a shovel. In two very different periods of our development, mankind invented them both. And there's nothing so very awesome about a shovel, is there?

Glossaries usually are at the end of a book, because a glossary is normally an optional reference — a handy place to look up an unknown word.

Unfortunately, it is virtually impossible to talk about computers without using specialized language, so I have labeled this chapter "Required." You may be surprised at how many words are familiar. However technical a language computerese might be, most of it consists of ordinary English words bent to a special purpose.

The most common word in conversations about computers is data. It means information — and that's all you need to know. Data processing means "doing something with information," but more often it is accepted as meaning "a computer doing something with information." DP can mean the department where the computer is located ("Go see whether DP has any spare rubber bands") or what line of work someone is in ("I'm in DP") or a few other things.

> ***"However technical a language computerese might be, most of it consists of ordinary English words bent to a special purpose."***

Strictly speaking, the word data is plural, meaning more than one datum. For example, your Social Security number is a datum kept on file by the Internal Revenue Service, and your name and address are among the other data that are kept.

Unfortunately, data has come to be used for both plural and singular, so that one is more likely to hear the phrase "the data is correct" than "the data are correct." In lieu of the word datum, phrases like "piece of data" are in common DP usage.

A large computer is often referred to as a mainframe or a CPU (central processing unit); smaller computers are minis or micros. This discussion relates primarily to large computers, and a computer, as far as we'll be concerned, is a complex electronic device that can be directed to process data rapidly and accurately. Exactly what is meant by "process" depends on the particular application.

One application of computers is performing arithmetic calculations upon data, but there are other things that can be done to data: Data can be printed, tallied, sorted, compared, added to, deleted from, combined and translated, to name a few. And there are any number of ways in which the functions may be combined.

But before a computer will accomplish anything at all, it requires instructions. The act of writing the instructions in a language suitable for computers is called programming. A program is one set of such instructions (which would be written by, of course, a programmer). A program defines the procedures a computer must follow to accomplish some desired result. Usually more than one program is required to perform a job (a job is simply some task, defined by a human, that a computer is required to complete). Several programs that relate to each other — for example, all the programs relating to

I want action.

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the processing of a payroll — are referred to as a system.

Because the programs that process payroll are applying the computer to a specific problem, they are known together as an application system. Such a system may consist of several jobs. In the example of a payroll system, a job might be run every two weeks to print paychecks, and another job might be run monthly to print a report for the company president showing how much money was spent on overtime.

Another kind of system is the operating system. This group of programs does not produce anything as tangible as paychecks. It is both the servant and overseer of all other programs. A job will not start until the operating system ascertains it has the resources available to run it. An application program — like the one that prints paychecks — really submits requests for resources to the operating system and does not use the resources directly. So the paycheck program will announce to the system it has a check to print, and the system will actually issue the commands that initiate printing.

Notice that "system," with no qualification, usually means "operating system." The operating system designed by one large computer manufacturer is called the Master Control Program, or MCP, a name that sums up the concept of an operating system neatly.

The programs that make up an operating system usually are bought or leased from the same firm that built the computer the system runs on. Application systems usually are written at the installation where the computer is used, but they may also be purchased or leased. Both sets of programs are generally referred to as software, to distinguish them from hardware. Hardware means actual, physical devices, like a printer, or the computer itself. Software, as a rule, is what instructs hardware.

It is doubtful you can have avoided seeing the output of the sort of printer that is attached to a computer. Your monthly bank statement will almost assuredly be generated by a computer, as will any piece of junk mail that has your name inserted in it somewhere ("Dear Mr. Plunkett of Green Falls, Nevada, you may have won One Million Dollars!").

This sort of printer was designed to accept different kinds of paper (forms) so that the same printer that was used to print the junk mail can later be used to print address labels for envelopes and a report on how many letters have been prepared. To avoid having to put a form in a printer every time a page is done printing, such printers use continuous forms, which are many hundreds of pages attached to each other but perforated in such a way that they may be separated after printing.

A necessary type of attachment to a computer is some external storage device, which allows large amounts of data to be saved and, in some cases, to be transported to some other computer or to a vault for safekeeping. The storage in a computer is not sufficient for large amounts of data and, because it is a special kind of electronic storage, it gets cleared out every time the computer is turned off. That kind of storage — computer storage — is for data and programs that the computer currently is using. External storage is for data that must be saved.

The two most common types of external storage are tape and disk.

Tape drives are much like a home tape recorder in concept: A roll of tape, with iron particles on it, passes by an electromagnet, which aligns the iron molecules on the tape. Of course, a tape drive records and plays back data, not music. A library of tapes — all labeled and numbered — will normally be found somewhere near the tape drives.

Disk drives contain stacks of platters whose surfaces can be read by an electromagnet. The platters revolve at a high speed. When data is to be read or written, a device called a head moves to the proper spot along the radius of one of the disks and waits for the point on the disk to spin by that is to be read from or written to.

The advantage of this technique over tape is that data can be randomly, as opposed to sequentially, accessed. The situation is analogous to a cassette tape vs. a long-playing record. If you wish to listen to a song in the middle of the tape, you have to run the tape until it gets to the middle.

With the record, you could simply lift the tonearm and set it down at whatever song you wish. It works the same way with data: It is possible on a disk to access any datum almost immediately, without first accessing all the data that comes before it.

The advantages of tape over disk are cost and portability. It is cheaper to store large amounts of data on tape. A tape is about the size of two dinner plates, whereas a disk module (containing the platters mentioned above) is usually about the size of a bread box and is far more expensive to manufacture. Moreover, some disk modules cannot be removed from the disk drive itself, so if the owner requires more disk storage, it means a whole new disk drive, not just the platters that go inside it.

Most large computer users have both tape and disk.

When data is stored on disk or tape, it is grouped together according to the way it is used, and each group is called a file. Each file has a unique name, like "BOOK.SUBSCRIBERS" or "EMPLOYEES." A file contains one or more records, each one containing different data. The file called EMPLOYEES might contain a record for each employee, and each record might contain an employee's name, address, Social Security number and pay grade. A group of files that has a

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logical relationship with each other is sometimes called a data base.

In the early days of computing, data was stored on punched cards. Although this technique is considered archaic in most DP circles, it does persist. To use cards for output from a computer, a device called a card punch is used; to use cards as input to a computer, a card reader is used. Card readers are used most often now merely to make the operating system aware of a job to be run, a process requiring only a few cards. This is called job submission.

It is not uncommon for all job submission to be performed from a video display terminal, also called a VDT, a cathode ray tube (or CRT for short), a tube, a terminal or a screen. The fact that there are so many synonyms should suggest just how common these things are. Software is available to allow many functions on a CRT. Programmers may use CRTs to write and change programs and to submit jobs to test the programs. Airline ticket agents use them to find out what seats are available on a particular flight. Entry clerks type in information about you on them when you subscribe to a magazine.

A special kind of CRT is used to monitor and control the computer and the jobs running on it. This is the console, and it usually can be found right next to the computer. The computer operator uses the console to communicate with the system. On most systems, several jobs can run at the same time — or that's the way it looks. Actually, the operating system divides up the use of the computer, doing a piece of this job, then a piece of that job, then a piece of this job again, going back and forth so quickly it appears to be running more than one job simultaneously. This is multiprocessing.

The ability to run jobs concurrently (which is not the same as simultaneously, remember) allows many computer users to make use of the same computer. Two basic kinds of activities may go on: batch and on-line. A batch job doesn't allow much human intervention, short of submitting it to the system. It requires a thorough explanation (to the system) about what data the job will require or write, what programs will be executed and so on. This explanation is submitted in a special job control language (or JCL).

On-line or interactive tasks are initiated by someone at a terminal. The information the system requires, about data and programs, has been supplied to the system already. All the terminal operator needs to do is type in requests and await replies, which will be presented on the terminal screen. In some contexts, the distinction between batch and on-line is denoted by background and foreground.

A different kind of program is required for interactive tasks than for batch tasks. Often a programmer will specialize in one or the other.

Programmers, like any humans, do not all speak the same language. Some write programs in high-level languages like Cobol, PL/I, Ada, Fortran, Basic or Pascal. High-level means "close to human language" (although a French Canadian might vehemently disagree). In Cobol, for example, if one wishes to display the current date upon the console, the correct command is: "DISPLAY CURRENT-DATE UPON CONSOLE."

Other programmers use a low-level language like Basic assembly language. This is a language more directly related to machine language — the language used within the computer — than to English. Any of the programmer languages must be translated into machine language before they are executable — able to be run on a computer. The programmer does not perform this translation by hand, of course; there is a program that does it for him, usually called a compiler.

Even once the program is translated to a series of digits that the computer will react to, there is no guarantee the program will work the

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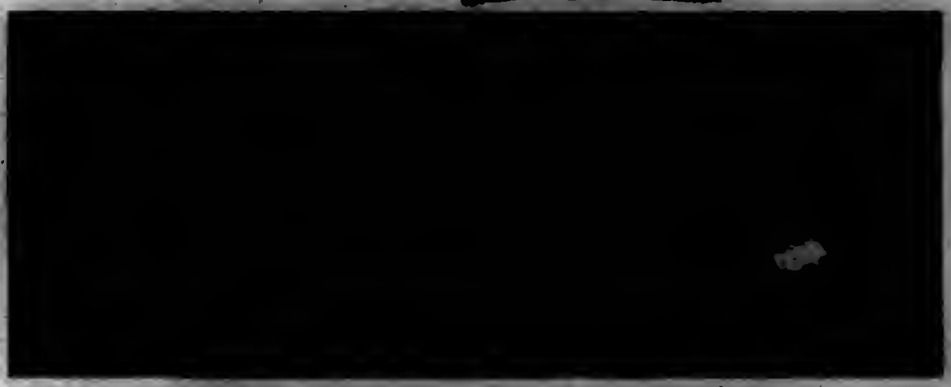

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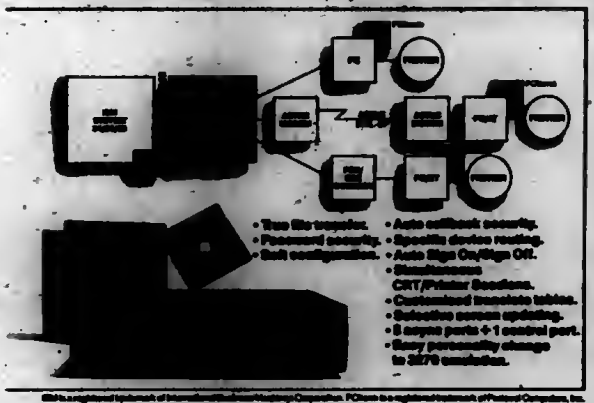
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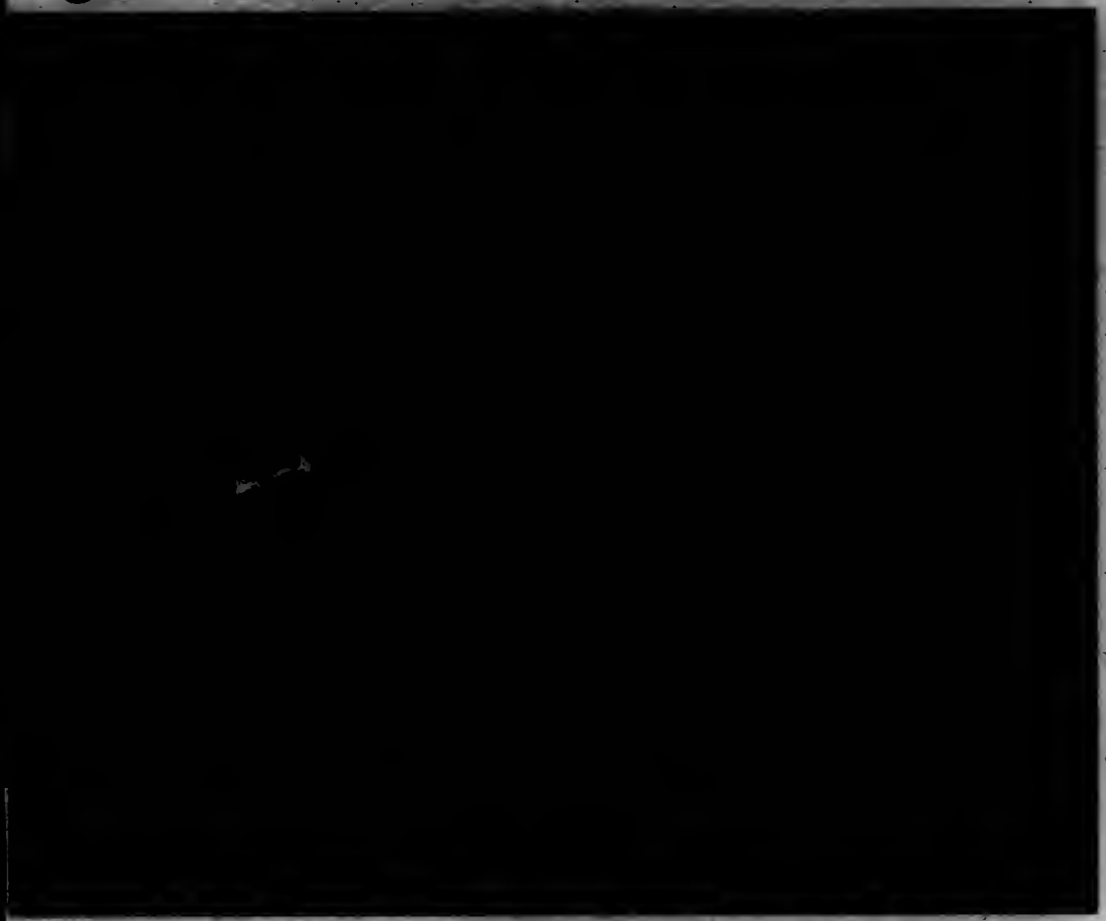

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way the programmer intended. It may not work at all. A program that isn't working properly might produce 1,000 pages of gibberish instead of the Year-End Profit Analysis Summary, or it may end abruptly before it has produced anything at all. The case of the abnormal end (or abend) is familiar enough to programmers that many not-so-technical terms are used to describe it: Programs die, blow up, cancel and crash, not to mention blow away, crap out and take a dump.

Whether the program's output is bad or nonexistent, the programmer must start the process of debugging the program. As the word connotes, this means getting the bugs out of a program, correcting the things that are wrong with it. If the program abended, the operating system may have issued an error message at the time of the abend that describes the problem.

If this is insufficient, the programmer may have to study a dump. A dump is a printed listing of part of the contents of computer storage just as it looked when the program failed. This listing bears little resemblance to the program as the programmer wrote it. It's just page after page of numbers — a symbolic rendering of the machine language of the computer.

For reasons explained in the next section, the numbers are not decimal numbers, but numbers in the base-16 or base-8 system. The programmer must find the offending code in this jumble and relate it to the original program. Needless to say, most programmers look forward to dumps as vampires look forward to dawn.

The languages used by programmers were designed to be understood by humans, not computers, so while a programmer has to know his language, it is rarely necessary for him to have a detailed knowledge of how a computer works. If you find the concepts discussed in this section difficult to grasp, don't feel badly; many DP professionals have the same problem. (Of course, there are plenty of people who find the concepts childishly simple, and loads of fun, too.)

You may have heard a computer described as a vast storehouse of switches, switches which may be on or off. The switches are actually electrical charges of one intensity or another, stored in the complicated circuits of the computer. Both the instructions executed by the computer and the data stored in external devices have this two-digit code of the switches — on or off, or as it is also conveyed, 1 or 0. Since everything the computer processes may be broken down to these two values, 1 and 0, it may seem the variety of information the computer can store and use must be limited — but this isn't so.

We are accustomed to using the base-10, or decimal, system of counting. It uses 10 symbols, 0 through 9, probably based on the fact that we have 10 fingers to count on (and which suggests, since we don't use 20 digits, that shoes were invented before the decimal system). With these 10 symbols, we can write down any number (limited only by our stamina). We understand that in the base-10 system, the rightmost number always means the number of ones; the next digit to the left means the number of tens; the third digit means the number of hundreds and so on. So we know that 237 in decimal is a shorthand way of saying (100 x 2) + (10 x 3) + (1 x 7).

Because the computer deals with only two different values, the decimal system is not a direct and convenient way to represent the contents of a computer. A binary (base-2) system often is used. In fact, the common name for those switches is bits, which is a contraction of binary digits. A bit may be on or off, 1 or 0. That's all.

So how do we make a bigger value than 1 with only those two symbols? By stacking up symbols, much the way we do in decimal. In binary, each column will be a power of 2 instead of 10; so the rightmost digit will mean how many ones, the next digit to the left will mean how many twos, the next digit how many fours, the next digit how many eights and so on. The binary number 1010 means (8 x 1) + (4 x 0) + (2 x 1) + (1 x 0) or, in decimal, 10.

The binary number 0101 means (8 x 0) + (4 x 1) + (2 x 0) + (1 x 1) or what we usually call "five." Four bits allow us to make 16 different numbers. You may have noticed, though, that binary notation is not as concise as decimal; if we wanted to write numbers in the thousands or millions, we'd have so many ones and zeroes lined up it would be awfully inconvenient to read them.

Three numbering systems

Decimal	Binary	Hexadecimal
0	1011	9
1	1100	C
2	1101	D
3	1110	E
4	1111	F
5	10000	10
6	10001	11
7	10010	12
8	10011	13
9	10100	14
10	10101	15

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That's why the contents of computer storage are sometimes symbolized by some larger base than binary: octal (base-8) or hexadecimal (base-16). Hexadecimal is not only more concise than decimal, but it translates very nicely from binary. For every four binary digits, a single hexadecimal digit (also called a hex digit or, rarely, a hexit) can be created.

Sixteen symbols are required in a base-16 numbering system: The symbols 0 through 9, plus A through F, are used. In this system, the right-most column still represents the number of ones, but the next column to the left means how many sixteens, the next column how many two-hundred-fifty-sixes and the next column (take a deep breath) how many four-thousand-ninety-sixes. So the hex number 72A3 may be translated as (4096 x 7) + (256 x 2) + (16 x 10) + (1 x 3). Each column represents a power of 16. If this is beginning to seem a little murky to you, it will help to compare the numbering systems now:

After all this, it seems there is no way to convey anything but numbers in computer storage. What about the alphabet? Punctuation? The computer does more than process numbers, of course. So the hexadecimal numbers 00 through FF (0 through 255, in decimal), are understood to represent different characters. A set of symbols commonly used has the hex digits C1 represent the letter "A," C2 the letter "B" and so on. The same system uses 5B to mean "$" and 40 to mean a space. Each pair of hex digits is called a byte.

We know then that a byte contains two hex digits (or eight bits), that it will have a value from 0 to 255 and that it can be used to represent some printable character. Three bytes (or 24 bits) of computer storage would be necessary to store the word "cat."

It is not unreasonable to think of a byte as simply one character of storage and to forget about all the smaller components the byte can be divided into. If you think of bits ever again after this paragraph, you can think of them as on/off switches instead of binary digits (if you prefer). And take heart; I'm through talking about numbers.

Most of this article is concerned with what are called mainframe computers. These are large computers, which usually are capable of supporting multiple users, and which contain only the electronics necessary to process data — that is, any storage devices, terminals, card readers and so on are external to the computer; the computer itself tends to look like nothing more than a big metal box. Inside the mainframe are many circuits, logic boards, storage components and, usually, some kind of machinery for keeping everything from overheating.

A microcomputer, in contrast, typically contains a single microprocessor, a compact module about the size of a stick of gum, instead of the many components found inside a mainframe. Any of the personal computers on the market are micros, as opposed to mainframes. In between those two are minicomputers, which sometimes are a small collection of microprocessors combined in such a way that they act like a mainframe. To further confuse matters, some of these minis are powerful enough to be called superminis, some of which have greater processing speed than some mainframes. But generally speaking, mainframes are the most powerful computers, microcomputers are the least powerful, and minicomputers are the machines in between.

Microcomputers are much simpler to design, build and manufacture than mainframe computers. It is possible to buy the necessary parts to build a microcomputer for a few hundred dollars, put them together and sell the assembly for thousands of dollars — and many individuals have done just that. Some large and famous microcomputer companies started as tiny businesses in garages and basements.

Another thing about micros worth noting is that it doesn't require much knowledge of computers to build one; what is more important is a knowledge of electronics.

As a result of these things, the language of microcomputers is very often different from the language of mainframes. For example, a mainframe operator performs an IPL (Initial Program Load) to start the mainframe, whereas the owner of a personal computer will boot the system on the micro (from "bootstrap," which some early microcomputer designer imagined the micro pulling itself up by).

The primary device for storing information used on a micro is likely to be tape or disk (just like the mainframe), but the disk is often really a diskette or floppy disk (a flat sheet of plastic with a special recording surface, contained within a plastic envelope), and the tape can be a perfectly ordinary cassette of the same sort used to record music.

Because some microcomputers were designed specifically for home use, they have special features to make them easy to use. One of these is called a mouse, which is named for its appearance. A mouse is about the size and shape of half a tennis ball and is connected to the micro with a wire — which suggests a tail. It can be pushed around on any flat surface (like the desk the micro is sitting on), and moving the mouse causes some movement on the computer screen.

On the screen might be a list of names; to pick one, the computer user would roll the mouse around until an underscore character on the screen was under a certain name, then punch a button to let the program know a selection had been made. The program then might display information about the person selected. (By the way, that underscore character is known by most

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terminal users — not only microcomputer users — as a cursor.)

Sometimes pictures will be displayed on a microcomputer's screen instead of words. With a system like this, the user might move the cursor to a picture of a printer, rather than typing in commands to initiate a print operation. It is becoming common to refer to these pictographs as icons.

Some micro manufacturers have taken this a step further: Instead of moving the cursor to the icon one wants to select, the micro user can merely touch the desired symbol with a fingertip. Touch screens like this are believed by some to be the most natural way for a human to use a computer and, therefore, may be used eventually for all computers. The touch screen is covered with a touch-sensitive film, or the frame around the screen contains lights and sensors that a fingertip will block.

Whether the touch screen is a hint of the computer's future or not remains to be seen. However, graphics (like icons) will certainly continue to be desirable. Machines allowing the user to create pictures, graphs, architectural renderings and so on are relatively common. The person who creates such graphics usually wants to immortalize them and so requires a special kind of printer.

The most popular type of printer for attachment to a micro is a dot matrix printer. The dot matrix refers to the device that actually strikes the print ribbon or paper: It consists of 35 or more needles, each of which can be retracted or extended to form different characters out of the resulting dots. This allows a printer to be very fast, because the movement of the print head is only back and forth across the paper.

Crude graphics are possible with this type of printer, because it can be programmed to print dots anywhere on a page. Pictures composed of dots, like those printed in newspapers, are possible; however, simple bar charts, pie charts and special lettering are more common applications.

For the printing of more sophisticated graphics, a plotter is used. This is typically a very expensive and fairly large printer that prints with one or more fountain-pen-like devices moving over a stationary sheet of paper.

Word processing applications that demand letter-quality printing (like a business letter, a resume or a free-lance writer's manuscript) require a third kind of printer: a daisywheel printer. The daisywheel, usually made of plastic, is mounted between a hammer and a print ribbon. It consists of many spokes, and at the end of each spoke is a raised character, exactly like a hammer on a typewriter.

The wheel spins around when the printer is in use. When a daisywheel printer prints the character "a," it waits until the "a" spoke is in front of the printing hammer, the spinning pauses for an instant, and the hammer comes down.

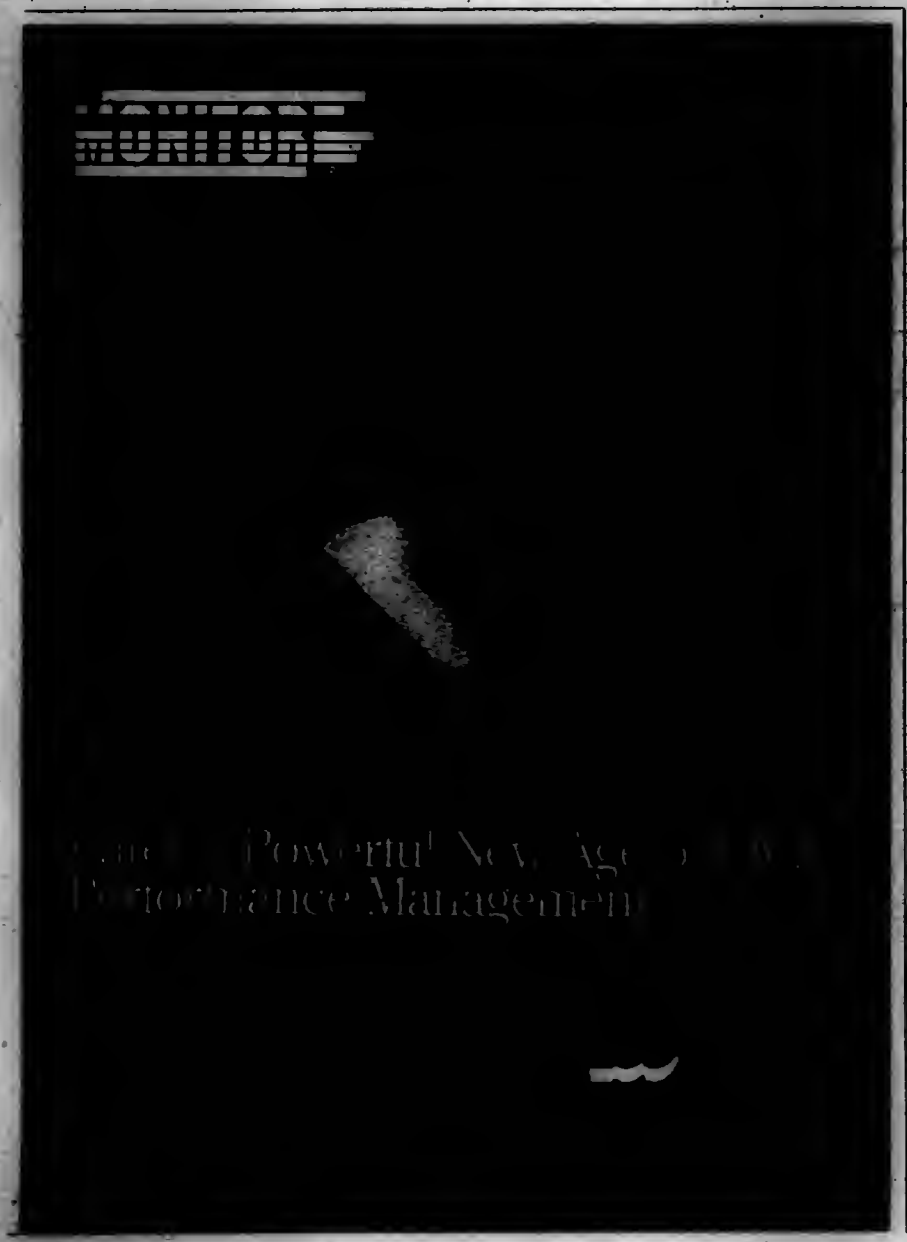
As a rule, these letter-quality printers are slower than dot matrix printers, because the print mechanism not only moves back and forth across the paper, but it must wait momentarily for a character to come into position in front of the hammer. Their advantage is the appearance of their printing, which tends to be as good as that produced by the best electric typewriters.

All these things may be of interest to a DP professional, even one concerned only with mainframes, because it has become desirable to establish communications between micros and mainframes. Departments of large companies and corporations have purchased microcomputers to help them do their work and are now discovering it would be a great advantage to have direct access to data stored on the mainframe system at the main office; main offices are discovering it is to their advantage to have access to their satellite micros.

For example, an insurance agent in Indianapolis might work for a company based in Chicago. Every month, the agent is mailed a list of rates for each kind of insurance policy, as calculated by the Chicago office. The agent types the rates into his microcomputer once a month, then uses the micro to create policy declarations for new clients. Then the agent prints a list of new policyholders and mails the list to Chicago.

Obviously the ideal situation would be for the agent to call in to his Chicago office's computer every morning to get the current rates, which would be downloaded to his microcomputer. When he typed in a new policy on his micro, the ideal situation would be for that information to be automatically uploaded to the mainframe in Chicago.

Because this ideal is slowly becoming reality, DP professionals who are accustomed to mainframes are learning the language of micros and vice versa.



About the author

Bruce Kule is currently a software engineer for Paradyne Corp. in Largo, Fla. He has been a truck driver and a high-speed planer operator in Wyoming and a systems programmer near Detroit. He now likes and writes on the shore of the Gulf of Mexico.

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Special Report

AT&T, Apple, IBM gear up for

By Aaron Goldberg
Special to CW

With the war in the personal computer market fast approaching the apocalyptic battle, it is an important time to understand the strategies and weapons that the major opponents have at their disposal. The present conditions of this conflict have left some of these competitors battle weary or bristling to fight. One thing is for certain, the winner or winners will take home some lucrative spoils.

Each of the three vendors analyzed here, namely AT&T, Apple Computer, Inc. and IBM, is notable not entirely for its present position in the market, but rather for the role that each is playing in the marketplace.

Each has its own operating environment (AT&T with Unix, Apple with Macworks and IBM with PC-DOS), and each company has many resources that it can use to sell the personal computer products that it develops.

It will be an interesting battle, with each opponent having some clear advantages and disadvantages in the competitive marketplace.

Goldberg is director of microcomputer systems services with International Data Corp., a Framingham, Mass.-based market research firm.

AT&T

AT&T is the sword of Damocles that has been hanging over the DP industry's head since Judge Harold Greene divested the company. The promise of the deed, however, has been far greater than the deed itself. AT&T has yet to make its impact.

The company started out by selling an IBM-compatible system for which Olivetti Corp. was an OEM. While this system is a reputable product, AT&T's real entry into the market was with its Unix PC, which has been hailed by many as one of the better personal computers.

AT&T has many market advantages. As owner of the Unix operating system, AT&T is finally gaining support of its System V from the majority of third-party software suppliers. In addition, the Unix PC introduction made AT&T the only one of the big three vendors whose major operating system is compatible with multiuser system operating environments. This is a tremendous advantage in the small-business market, where the upgrade from a micro to a multiuser system is still a major problem.

AT&T has also developed a good user interface for Unix that allows the nontechnocrat to use the system in an economic manner.

The organizational strength of having a large direct sales force already in place and a customer base from the private branch exchange days are also to AT&T's advantage. And the stability of the AT&T name cannot be underestimated in these days of shakeouts, Chapter 11 of the Federal Bankruptcy Act and various other corporate "suicide" techniques. In addition, because its large sales volume from other lines of business contribute to profits and provide working capital, AT&T has the luxury of being able to learn in the personal computer market without the added pressure of seeking instant profits.

On the negative side, AT&T has yet to prove itself to be a major factor in the computer market in general. Its 3B series has received less than enthusiastic responses from customers, and the 6300 does not disguise well the fact that it is an OEM product. The company also suffers from an image problem. Many perceive AT&T as either a less than dynamic monopoly or an information processing company searching for identity.

Apple

Apple is the company that people love to talk about. Whether it is the Macintosh division's 15-minute en-

Personal computer phone tools await

By Eric Bender
CW Staff

If managers knew what was good for them, the theory goes, they would all want an integrated voice/data terminal — a single desktop device to take them through their daily phone calls and computing tasks, handle scheduling and give other benefits on the side.

More than two years ago, vendors began to blend IBM Personal Computer capability into this cheerful scenario. Currently, more than a dozen products (either add-ons or complete systems) are claimed to combine IBM Personal Computer functions with integrated voice/data communications.

In recent months, major players have joined the fray. One of them, Compaq Computer Corp., predicted that overall sales of this class of machine will approach 100,000 this year and rise to one million in three years.

However, just about everyone agrees that the personal computer phone systems already shipping have made relatively little headway in corporate America to date.

The biggest stumbling block, vendors and analysts say, has been persuading customers that the devices meet important needs that are not addressed elsewhere at a reasonable cost.

More end-user education needed

The products "take a lot more end-user education than we'd thought," said Don Cooper, marketing vice-president at Zaisan, Inc. in Houston, which introduced an IBM Personal Computer-compatible voice/data system last July. Market growth is "not nearly as fast as the prognosticators suggested," he said.

Stephen Caswell, editor of "Electronic Mail and Microcomputer Systems" newsletter in Toronto, was more blunt: "Vendors have all these products, but users don't have much interest," he said. Instead, personal computer users buy a modem and a desktop organizer package, such as Borland International's Sidekick, that offers many similar features, Caswell suggested. "Why would anyone in his right mind go out and pay hundreds of dollars extra so [the product] runs a little smoother?"

Additionally, users complained that the first-generation personal computer phone products lacked the general polish and tight integration of functions that were their main selling points. For example, to enter a single telephone listing on the Cosystem offered by Cygnet Technologies, Inc. of Sunnyvale, Calif., users were forced to load a separate program.

Other technical limitations often arose when the new equipment tackled multitasking. If connected to two telephone lines or integrated into a proprietary digital switch, the devices accommodated simultaneous

A sampling of the personal computer phone

Rolm's Cedar

Zaisan's ES3

Cygnet Technologies' Cosystem

Special Report

microcomputer war

ployee back massages and first-class travel to anywhere or the new interface ideas provided in its latest product line, the company has no lack of press. But behind all of this flash is a computer company trying to take market share from one of the largest companies in the world.

Apple's advantages in the personal computer war are substantial. The company has developed a strong following in both its own and other user camps. Many personal computer users who started computing before 1981 can claim that they learned computing with an Apple machine.

Apple's image, created by clever marketing, has endeared them to the computer neophyte and the intimidated prospective buyer. In addition, the Macintosh Office concept is the only single-vendor offering of a complete personal computer/local-area network/Laser printer workstation now shipping that actually works.

Also, the strength of the Apple II family cannot be overlooked. Although the current emphasis of this product line is on the consumer market, there are still many Apple IIe products being sold for corporate use, and the software base is more than able to handle any challenge.

The corporate advantages for the company are only now starting to fall into place. As John Sculley guides the company from gangling adolescence into maturity, the internal structure of the company will flower. The skill of Apple's upper-level staff members — including, of course, Sculley — as marketers and builders of opportunities bodes well in the long term, although corporate maturing is still a key factor in the company's future prognosis.

The disadvantages Apple faces are serious. At the present time, the company is a single-product firm centered in the personal computer market. While its position in this market is strong, Apple may find it difficult to match the high-flying history of the early 1980s as margins get squeezed and the growth rate slows. In the past, the company has also set itself up as an IBM antagonist, and in the process, it has antagonized many large user firms. Although this attitude is less prevalent now, first impressions change slowly.

Since Apple is a comparatively young company with a management structure that is still evolving, its management must balance its attentions between the personal computer division (the Apple II product line), which is revenue-producing, and new ventures into business computers (the Macintosh Office concept). If this balance is not maintained, one result could be a significant squeeze on working capital and cash flow.

A stumbling block here is that Chairman Steven Jobs runs one division,

See APPLE SR/5

Personal computer worldwide unit shipments

	1983	1984	1985
	670,000	[illegible]	2,475,000
	700,000	[illegible]	1,775,000
	0	[illegible]	100,000

Source: Dataquest, San Jose, CA Chart

customers

voice/data calls. But juggling several personal computer jobs in addition often proved impossible.

Confusion in the distribution channels created other problems. Both traditional telephone sales representatives, who typically market the system products to customers without microcomputers, and computer dealers who sell peripherals to personal computer users had difficulty figuring out how to push the new devices.

Despite all the potential drawbacks, many users said they were pleased with the new personal computer phone systems.

One large Midwestern aerospace firm with thousands of IBM Personal Computers has installed 10 Zelean, Inc. ES3s with satisfactory results, according to a communications branch manager of the firm. He described the ES3 as a good buy for the money, although he said "it's hard to

See PHONES SR/5

competition

ITT's Xtra

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Special Report

IBM's network scheme prompts critical question: Will

By Brian Jeffrey
Special to CW

After nearly three years of selling personal computers largely as stand-alone business tools, IBM has finally come up with a reasonably coherent software scenario for tying personal computers to its mainframe systems and applications.

The scenario, announced in October of last year, is built around IBM's Distributed Office Support System (Disoss), Professional Office Systems (Profs), System/36 and Personal Computer family. Links between Personal Computers and hosts are provided by Personal Services/PC, Profs/Personal Computer Connection, a new set of Displaywrite word processing software for Personal Computers and hosts and a group of products for tying Personal Computers to IBM's recommended departmental system, the System/36.

The good news is that IBM has finally come up with a workable solution for personal computer-based office automation. The bad news is that committing to the IBM scenario is likely to take end users in directions they do not want to go. In particular, IBM's evolutionary scenario is likely to lead end users into a progressively more complex, inefficient and expensive Systems Network Architecture (SNA)-based environment.

The keynote of the IBM approach is that it is evolutionary. None of the IBM products are new: Disoss is more than a decade old, Profs dates from the late 1970s, the System/36 is a repackaged version of the 1977 vintage System/34 architecture, and the Displaywrite series is repackaged Displaywriter Textpack word processing software.

Also of note is that the scenario pushes end users heavily into the 3270 world, with 3260 series terminal emulation also required to attach to the System/36. SNA is also much in evidence. Disoss is an SNA product, and compatibility between the various components of the IBM scenario has been implemented through the SNA-based Document Interchange Architecture and Document Content Architecture. Future enhancements to the IBM scenario are also likely to be oriented toward SNA and the 3270 interface.

SNA advantage

There is a superficial advantage to this. IBM claims some level of SNA commitment by more than 60% of its large system end users, and for many, the extension of SNA to include Personal Computers will seem attractive in that it is at least coherent and compatible with IBM host environments.

Successive software overlays on the SNA networks will provide the ability to transfer documents across most of the IBM product range. Image, high-resolution color graphics and, ultimately, voice traffic will all be folded into the SNA environment. It will all be a lot easier than trying to put together this type of scenario in a multivendor environment.

Jeffery is responsible for the IBM Watch program run by International Technology Group, a Palo Alto, Calif., consulting firm specializing in competitive analysis.

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The trade-off for compatibility will be an ever-increasing processing overhead; under IBM's latest office systems software lies a bedrock of CICS, IMS and Vtam.

Unfortunately, IBM's solution may be easier, but it also limits the options available. It means commitment to IBM host architecture and applications as the main component of office automation, and as the IBM scenario progresses, it is likely to mean that hosts will determine patterns of personal computer usage rather than vice versa. It also means a long-term commitment to SNA.

By the time that IBM has finished adding further software overlays to support office automation functions, integrated voice traffic and the like, it is going to look even more inefficient. The trade-off for compatibility will be an ever-increasing processing overhead; under IBM's latest office systems software lies a bedrock of CICS, IMS, Vtam and so on.

In the long term, there is also the disquieting possibility that IBM may start hiking SNA software prices much as it has done for 370 series host users with its costly MVS/XA equipment. This may not be planned by IBM now, but SNA is central to IBM's plans; the company has said that it is looking for major increases in software revenue this decade, and an end-user base locked into SNA would certainly be a temptation. By the end of the decade, SNA software costs for the average end user will probably be at least several times greater than their present level, and

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Special Report

micros suffer from hosts' inefficiencies?

it could be a lot worse.

There are alternatives, of course. Seen in historical perspective, the mid-1980s are going to be a very crucial time for determining the shape of information processing ties. Since the late 1970s, the development of the large-organization personal computer market has meant a move away from the old mainframe-based hierarchy and created large-scale decentralized processing for the first time.

Personal computer products and technology have been more closely tuned to real user requirements and work patterns than conventional DP systems have been; personal computers are used predominately for stand-alone purposes. As end users move toward personal computer-to-host links, the manner in which these are affected is going to determine the pattern of information processing in the average large organization for a long time to come.

A time for questions

Perhaps now is the time to be posing some very basic questions. Are personal computers merely intelligent terminals for accessing hosts? Or should central hosts and other systems be regarded as an infrastructure supporting a personal computer-based end-user interface?

The difference involves an important nuance. If the usefulness of a personal computer is taken as the starting point, an information processing environment may be built up that focuses on delivering information and capability to users in a manner which responds to their real requirements.

If the personal computer is a terminal, the emphasis is more on central applications, and the requirements of host compatibility start to become the No. 1 issue. An evolutionary, compatible progression, such as that which IBM offers, is likely to be the easier option. However, the price will halt the possibility of a more decentralized, user-oriented way of structuring large-organization information processing, at least for the time being.

PHONES from 69/3

talk people [in a large corporation] out of an IBM Personal Computer for [one from] a company named Zeinet."

The manager originally intended to give the new desktop micros to directors and vice-presidents. However, the systems lacked some fancy telephone features, and the speakerphone was not quite up to the job, so the machines ended up with engineering and procurement groups, he said. "The personal computer phones] still need some work, but they're going in the right direction," he concluded.

General Homes in Houston, which bought about 50 earlier Zeinet voice/data terminals to be used by its executives and at field locations, plans to upgrade about a dozen terminals to 8100s this year, said Ken Quenzel, director of information systems. This will allow current users to move into personal computing "without trauma," he said.

General Homes also evaluated Rolm Corp. personal computer phone equipment, tailored to the Rolm CBX digital switch, but turned it down for cost reasons, Quenzel said.

Cedars, Junipers find home

Iomega Corp. of Ogden, Utah, however, is finding a role for Rolm's Cedar personal computer phone and its Juniper add-on to the IBM Personal Computer, according to David Norton, vice-president for systems and administration. He said he expected about 25 Cedars and 50 Junipers to be installed by year end.

The company, which supplies computer components and peripherals, needs "an array of workstations," Norton said. Iomega considered meeting these needs internally, but found the Rolm alternative would cost about only 10% more. "We were willing to pay a percentage over to have a proven system instead of a mix and match and hope [one]," Norton said.

Iomega is giving Rolm Cypress voice/data terminals to executives, "who fundamentally require information," Norton said. Cedars are being placed with secretaries and other employees for handling letters or small computing needs. Junipers end up in engineering and financial groups with strong analytical needs. The company's Prime minis and dumb data-entry terminals also are hooked to the Rolm digital switch.

Rolm product suite

Like Iomega, Severn Federal Savings & Loan Association in Little Rock, Ark., is installing Cedars and Cypress as part of a suite of Rolm products, said Michael Flynn, assistant vice-president and telecommunications manager.

Currently, eight Cedars are installed, and they are appropriate "for a person who needs more than a smart terminal; more computer horsepower," he said. In IBM 3278 emulation mode, they access the association's IBM 4341 mainframe through the Rolm Gateway.

Severn has bought 26 Junipers for Personal Computer XT users but has installed only two on an experimental basis. One reason is that Rolm did not build in full document-file communications capability, preventing users from sending documents directly through the CBX for output on laser printers, he said. "It's one of those little things that takes time to work out."

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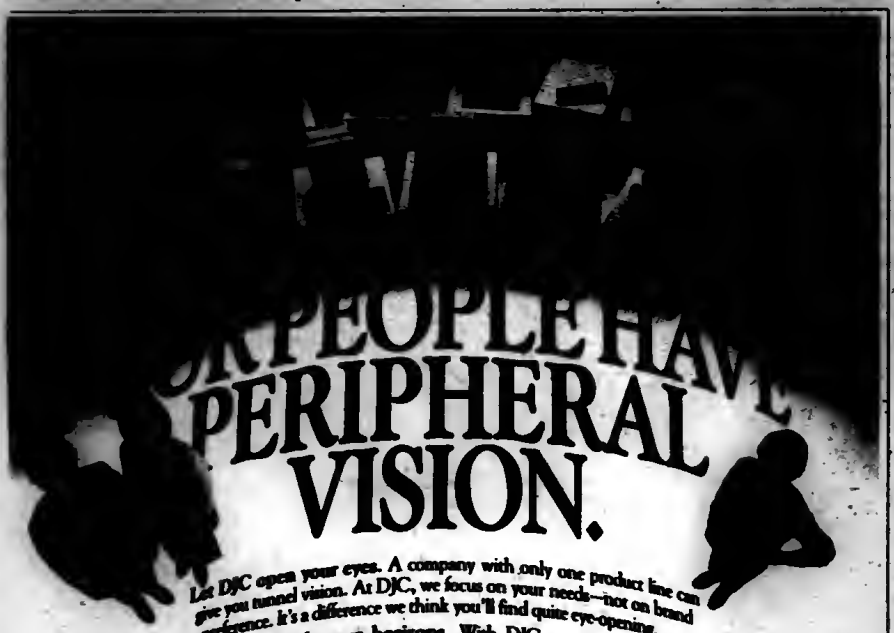

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APPLE from SR/3

which may result in a disproportionate distribution of company resources. The attention Apple directs to corporate culture rather than profit could be dangerous.

■■■

IBM hit the ground running in the personal computer market and has not slowed since 1981. While this market dominance and revenue-building trend is not likely to continue in 1986, it is not expected that IBM will suffer more than either Apple or AT&T. The company is, however, in the process of having to introduce a product line this year, which is not an easy task. Despite this, sales of Personal Computer products should rise more than 30% this year, and their position in the larger firm should be solidified.

The advantages of the Personal Computer family are many. The most important of these is the support that the company receives from third-party software and hardware suppliers. This has allowed the Personal Computer to be used for nearly all applications. Also, the IBM Personal Computer AT is a state-of-the-art product.

The advantages of IBM as a corporation is an element that makes other manufacturers jealous. IBM not only has the largest sales force calling on the largest present customer base of computer users but also has the largest number of reseller outlets in the world. In addition, the excellent reputation of the company allows it the luxury of constantly selecting from the top of the pool of talented prospective employees.

Applications software has been a weakness for IBM, and the present set of products offered with the Personal Computer is no exception. One exception is the PFS series software from Software Publishing Corp. These tools, privately labeled by IBM as the Assistant series, are doing reasonably well.

Another problem IBM faces is how to move from the Personal Computer architecture to the Personal Computer AT architecture. Already there are inventory problems both at IBM and the retailers, and it appears that a fire sale could be imminent.

The trials and tribulations of the PCjr are now history but not before IBM was stripped of the demigod status. All in all, IBM is facing challenges that rival both AT&T and Apple.

Special Report

Environment software marketplace heats up

Fourteen-year-old concept catches on, provides users with easy operating environment

By Robert Lefkowitz
Special to CW

This will be remembered as the year that the 14-year-old Xerox Corp. Palo Alto (Calif.) Research Center (Parc) user interface technology finally achieved broad market acceptance.

This technology involves the use of the following:

- Multiple application windows on a single video display.
- A mouse to move a pointer around the display.
- Menus that appear when the user needs to make a choice and that disappear as soon as the choice is made.
- Pictorial representations of objects, such as files, and actions, such as deleting a file, called icons.

This type of interface aims at providing users with a visual representation of the functions to be performed by their personal computers.

The 1983 introduction of Apple Computer, Inc.'s Lisa was the first attempt by a major hardware vendor to attract a large group of users to this new way of interacting with their personal computers. Although Lisa's high price kept it from succeeding in the marketplace, Apple followed with the Macintosh in January 1984. The Macintosh's success has drawn the attention of most major personal computer companies to this new visual interface.

Until recently, these vendors had been reluctant to look at the Xerox Parc interface technology because a number of firms, notably Xerox and Visicorp, lost substantial amounts of money attempting to market the technology to the personal computer user. The Macintosh's highly successful first year has forced major vendors to reevaluate their user interface strategies.

IBM, Digital Research, Inc. and Microsoft Corp., along with a host of small software firms, have invested millions of dollars in developing operating environments for the IBM Personal Computer. These operating environments are based on concepts developed at Xerox's Parc facility, and each is designed to make applications easier to use. Table 1 compares the features of the operating environment products of each major competitor in the environment arena.

Topview

Topview, IBM's offering, is significant for a number of reasons. These include the operating environment's ability to run existing, unmodified applications software, its multitasking capabilities and its method of transferring data between different applications through the use of keyboard filters.

Keyboard filters allow applications to share data by making it appear to the application that the data being transferred is coming from the user's keyboard, rather than from the computer's memory. This means that data can be passed to an application without that application being reprogrammed to accept data from memory.

Topview has been criticized for its inability to handle multiple graphics applications concurrently because it is character-based. However, Topview can run a single graphics application in foreground mode. Furthermore, IBM has targeted Topview to the business user who needs to perform concurrently tasks such as data base searching, communications and word processing. To date, these users have not expressed any need to perform multiple graphics applications simultaneously.

Topview represents the first internally developed major Personal Computer software product marketed by IBM. Since IBM has not yet licensed Topview to other hardware manufacturers, those who have been marketing Personal Computer compatibles are faced with a sizable problem: How do they maintain off-the-shelf software compatibility with the IBM Personal Computer if much of the applications software will be modified to run with Topview?

Before Topview, Personal Computer-compatible manufacturers could license Microsoft's MS-DOS operating system because PC-DOS was developed for IBM by Microsoft on a nonexclusive basis. But now, these manufacturers face a crucial decision. Do they simply maintain complete hardware and PC-DOS compatibility with IBM so that users can purchase Topview to run on their compatible machines, just as Amdahl mainframe users buy software directly from IBM?

Do they follow the risky and potentially costly course of attempting to reverse-engineer Topview themselves? Or do they concede the Topview portion of the market to IBM and attempt to look to other market segments with the help of the Graphics Environment Manager (GEM) from Digital Research, Inc. or Windows from Microsoft?

GEM and Windows

This past February, Digital Research began shipping GEM development systems to independent software vendors. GEM is designed to be as user-friendly for IBM Personal Computer users as the Xerox Parc/Macintosh-developed interface is for Macintosh users.

In fact, an early version of GEM shown at the Hannover Fairs in West Germany was so successful in its attempt to make the Personal Computer look like a Macintosh that Apple was rumored to be preparing to sue Digital Research. This suit did not materialize because Apple discovered that Digital Research developed GEM entirely from scratch, using the same public domain software technology from Xerox's Parc that Apple used in its Lisa and Macintosh machines. However, Digital Research is not relying only on the Personal Computer to provide the hardware vehicle for GEM. It has signed agreements with major OEMs, such as Atari, Inc. and Commodore Business Machines, Inc. to support GEM.

Digital Research, Inc. is targeting its GEM program at both the business and home markets.

It is positioning GEM for both the business market with the Personal Computer and the home market with Atari and Commodore, in the hope that the Xerox-Macintosh interface will achieve significant market acceptance in at least one of these markets.

Meanwhile, in Bellevue, Wash., Microsoft is quietly retrenching its Windows product. Microsoft's credibility took a major beating when it announced Windows more than a year before it was ready to ship. As of March 31, Windows had not yet shipped. Although Microsoft has said it will attempt to position Windows as a "Macintosh, plus more" for the Personal Computer, Windows appears closer to Topview than to the Macintosh.

Windows uses Topview Program Information Files (PIF) to get the parameters it needs to run an application. In addition, like Topview and unlike Mac and GEM, Windows is multitasking. And whereas the Macintosh and GEM make extensive use of icons for all objects and actions within the personal computer, Windows uses icons in some cases and text in others.

If Microsoft can meet its current targeted shipment date of April, it will provide OEMs with a clear alternative to GEM and will pose a formidable competitive challenge to Digital Research.

Apple Computer

And what about Apple? How will the current attention users are giving products that make the Personal Computer look like a Macintosh affect the Macintosh's sales? At first it might seem that GEM and Windows pose a major threat to Apple. Both products allow corporate users to buy IBM hardware while retaining the advantages of the Macintosh's innovative user interface. However, the number of users ready to adopt mice with windows and icons is relatively small compared with those who prefer traditional character-based applications.

Thus, a good argument can be made that GEM and Windows will help broaden the overall market for applications that use the new visual environments by making more users aware of the advantage of this type of interface.

See MIRROR 39/14

Lefkowitz is director of software research for Infocorp, a Cupertino, Calif.-based market research and information services firm specializing in syndicated services and custom research for the information processing industry.

The new visual environments
Features comparison

Windows				
Multiple Windows	Yes	Yes	Yes	Yes
Overlapping Windows	Yes	Yes	Yes	No
Pull-Down Menus	Yes	Yes	Yes	Yes
Desktop Accessories	Yes	Yes	Yes	Yes
Use of Icons	Extensive (Optional)	Extensive	None	Partial
Text Fonts				
Multiple Screen Fonts	Yes	Yes	No	Yes
Multiple Hard-Copy Fonts	Yes	Yes	No	Yes
Memory Usage				
User Memory Available on 512K Machine	384K	480K	320K	380K

Table 1 source: Infocorp

Special Report

Firms cannot afford casual attitudes toward piracy

By John J. Xenakis
Special to CW

Is your company in danger of being exposed to a potentially damaging lawsuit because of software piracy? If it is like most companies, the answer is yes, according to Paul S. Hoffman, a lawyer and author in Croton-on-Hudson, N.Y., who specializes in software contracts.

"The attitudes I have [seen] among data processing managers or information center managers are very casual attitudes toward [personal computer-level] software," Hoffman said. "They have an 'everyone seems to be copying, so I can turn a blind eye to it' attitude, even though they know that probably quite a few of their people are copying software at work and using it at home. That position is not acceptable. The company will end up with a great deal of exposure."

> *'[Managers] have an "everyone seems to be copying, so I can turn a blind eye to it" attitude.'*
>
> — Paul S. Hoffman
> Lawyer and author

The number of recent lawsuits attests to this. Lotus Development Corp. has won several judgments against companies which freely copied its 1-2-3 program. And the Association of Data Processing Service Organizations and Micropro International Corp. have recently filed litigation against American Brands, Inc. and Wilson Jones Co., complaining of copyright infringement.

Part of the confusion surrounding piracy comes about because the rules of the game are unclear. What is permissible varies from vendor to vendor and from software product to software product.

First of all, a software product is not actually purchased, at least not in the same way a computer is purchased. When software is purchased, a license is bought that allows the buyer to use that product in a certain way. The vendor still owns the software. The purchaser's rights to the software are limited by the license agreement and copyright laws.

Shrink-wrap license

Most microcomputer software products come with what is known as a shrink-wrap license. The packaging instructs the purchaser to read the license before opening the package and implies that the purchaser will be bound by the terms of the license agreements once the shrink-wrap seal is broken.

The restrictions imposed by these licenses vary. Some licenses restrict the use of the software product to only one machine, with as many users on that machine as needed. Others restrict the software to only one user, on several different machines if management wishes. Almost all forbid use on a multiuser machine. Some licenses forbid any copies from being made; others permit copies for back-up or archival purposes only.

Are such license agreements binding on the purchaser? "There is a great deal of controversy in the industry about how enforceable these agreements are," Hoffman said. "Some states, like Louisiana, have moved toward statutes that appear to validate shrink-wrap licenses as effective contracts, provided that they offer some minimum protection to the consumer. But nobody really knows at this point how effective these shrink-wrap licenses are, and I am not aware of any litigation in the contract sense."

Even though the shrink-wrap license agreements are not valid in some states, the software still cannot be copied freely. The software is copyrighted, and purchasers are still bound by the federal copyright laws, which permit them to make a copy of the software only for backup or archival purposes.

Copy protection

While lawyers are slugging it out in the courtrooms, an even more bizarre battle is being fought by computer engineers. This battle concerns the development of software that cannot be copied.

The original idea was simple. The vendor would put some illegal data on the software diskette so that the standard disk copying programs are not able to make copies of the diskette. That way, the vendor's software is protected from illegal use without having to depend upon legal protection.

In response, along came products called bit copiers. These products are specifically designed to defeat copy

See COPY SR/14

Xenakis is a Framingham, Mass.-based management consultant for the computer industry.

Special Report

Micros slash firm's telecom expenditures

Switch from dumb terminals pays off for multinational

SOUTHFIELD, Mich. — A multinational manufacturing firm based here cut its monthly telecommunications costs for international financial reporting from $25,000 to $2,000 when it began using microcomputers rather than dumb terminals to access time-sharing services.

Federal Mogul Corp. makes ball bearings, sealing devices and other parts used in the trucking, construction and aerospace industries and general industrial applications. The firm has manufacturing plants in 10 foreign countries and maintains inventories in 20 warehouses overseas. Its net sales in 1984 were $912 million; international sales accounted for $243 million of the total.

Until November 1983, employees at Federal Mogul's foreign offices keyed financial data about their operations into dumb terminals that were linked on-line to mainframes on General Electric Information Services Co.'s (Geisco) international time-sharing network.

Workers in the firm's international finance department here accessed and processed the information by dialing dumb terminals into a Geisco mainframe in Rockville, Md.

"Using dumb terminals meant that the mainframe did the actual number crunching," according to Wilhelm A. Schmelzer, Federal Mogul's director of international finance. "With each of roughly 30 international locations inputting various types of data, . . . this led to intolerable costs." The firm's headquarters was spending about $25,000 per month for line charges, CPU time and data storage.

The foreign offices were paying between $800 and $3,000 per month in line and connect charges. Employees in each office had to go on-line in order to key data into the system. "That is where the real cost came in," Schmelzer said. The costs varied according to how much time individual employees took to type in data, check their work and make corrections.

After a year's experience with the time-sharing setup, corporate management deemed the charges excessive and instructed the international finance department to cut costs. Schmelzer sent representatives to the foreign offices to check their procedures. He then analyzed the time-sharing bills to see where the firm could save money.

'We had to take other measures'

In a series of stopgap measures, his group pulled some foreign offices off the network, eliminated some types of financial reporting and cut back on the frequency of some transactions. The investigations and service cutbacks did not yield sufficient savings. "That's when we finally found that . . . we had to take other measures," Schmelzer said.

In September 1983, the department set up two trial sites for microcomputer-based time-sharing. The trial sites, Federal Mogul offices in Puerto Rico and South Africa, received IBM Personal Computers fitted with modems and financial software.

Employees in the two offices entered financial data on the Personal Computers and used the software, IMRS, Inc.'s Micro Control, to convert the figures from local currencies to U.S. dollars. After they entered, checked and corrected their work, the employees used the software's communications ability to dial in to the Geisco network and transmit their data.

The tests paid off. Because the offices entered and converted their data on the local processors and went on-line only to transmit the information, their combined line charges dropped from about $2,300 to about $600. The managers of the local offices were pleased with the results, as were members of the international finance department. According to Schmelzer, "We jumped through the roof here."

Schmelzer's group recommended to corporate management that Federal Mogul adopt the micro-based setup for all its international accounting transactions. In November 1983, the firm began to install Personal Computers and compatible machines, each running the Micro Control software, in other foreign offices and at its headquarters.

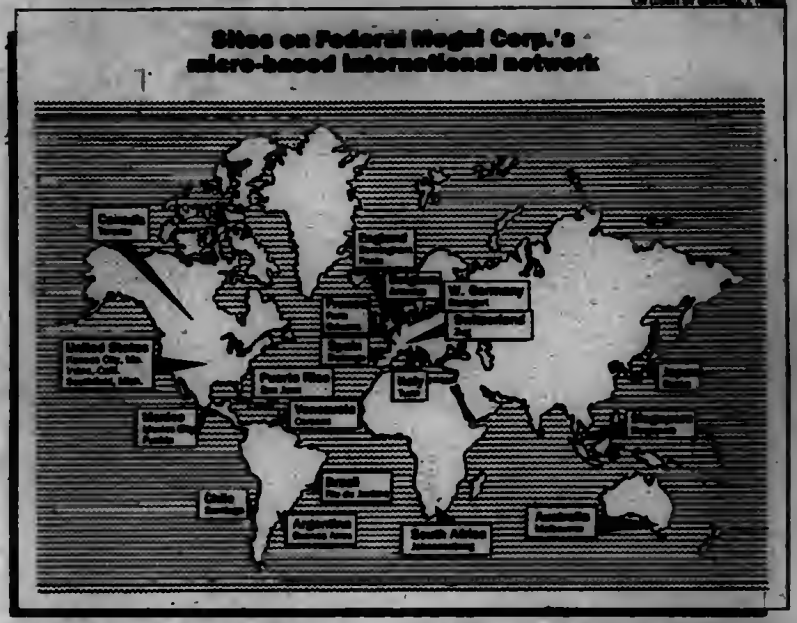

Figure 1. Micros at 23 of Federal Mogul Corp.'s locations currently have access to the firm's time-sharing network. Stuttgart, West Germany — the 24th location — is scheduled to come up soon.

> *The cost savings from local processing have eased relations between the corporation's international finance department and its foreign office managers, who have to foot the bill for transmitting their data.*

Twenty-three Federal Mogul facilities in 18 countries currently use the system; one more is scheduled to come up soon (Figure 1).

The firm's headquarters brought its monthly time-sharing costs down to about $2,000 a month, about $1,200 of which constitutes charges for data storage. The foreign offices' average time-sharing costs have dropped to between $25 and $100 per month.

With the system, the foreign offices key in financial data on their personal computers and then go on-line to transmit the information to a mainframe on the Geisco network. Employees in the international finance department at the firm's headquarters then dial in to the time-sharing network to call up the information.

They download the data to an IBM Personal Computer XT and use the Micro Control software to compile the information into financial statements and management reports. "We still use the communications link we used prior to installing Micro Control," Schmelzer said. "It's just that every computation we need is done at the office concerned, and the link through the network's timeshare is purely to transfer data."

The cost savings from local processing have eased relations between the international finance department and the foreign office managers, who have to foot the bill for transmitting their accounting data.

The managers had complained about the cost of carrying out reporting procedures with the terminals. Although they complied with corporate guidelines, they did so grudgingly, according to Schmelzer. "You can imagine the support we have now from the managers," he said.

In the foreign offices, employees use their personal computers for tasks other than transmitting financial information. Some small offices have set up inventory and receivables systems, and all the offices use Lotus Development Corp.'s 1-2-3 spreadsheet package, according to Schmelzer's assistant, Mark Gergel, Federal Mogul's international accounting manager. "We've come a long, long way in one year in automating those locations," Gergel said.

By bringing microcomputers to the foreign offices, the international reporting system provided the basis for these other uses of automation, he said. "If it weren't for the . . . reporting system, we'd be light-years behind."

The system's software has given the international finance department a variety of reporting capabilities. Schmelzer's group uses the software to compile 80 separate ledgers each month, including profit-and-loss statements and balance sheets for each foreign location.

Quick closing

With the international reporting system, the department can close its books for any given month within 11 working days of the month's end, Schmelzer said.

At the end of each month, the department transfers compiled financial data to Federal Mogul's corporate general ledger system, which runs on two IBM mainframes: a 3033 and a 3084 Model QX. A terminal emulation board on the Personal Computer XT allows for the transfer.

Gergel said one of the software's greatest benefits is that it allows the department to format reports in-house. When Federal Mogul used Geisco to process its financial data, it had to request format changes and wait for the service bureau to make them. Most requests required a turnaround time of between 10 days and three weeks.

An in-house programmer can now develop reports on the microcomputer in as little as 15 minutes, he said. With in-house development capability, Gergel said, "We're no longer reliant on anybody."

Special Report

Microcomputers spur interest in telecommuting

By Gil E. Gordon
Special to CW

When Alexander Graham Bell invented the telephone, he probably had no idea it would lead to Dial-a-Joke, home pizza delivery and telemarketing. Those applications evolved because the telephone was available. The telephone affects many aspects of our lives and in a similar manner, the microcomputer is beginning to have the same kind of widespread, unpredictable impact on business today.

One such impact is on the location of work; the micro is one of the driving forces behind telecommuting. It is no longer necessary for all employees to work in one central location. Workers can be productive in their homes and other remote locations with payoffs for employees and employer alike.

> ***The key to successful implementation is to focus on the human resource and supervisory issues because telecommuting is rarely a technical challenge today.***

The basic idea of telecommuting is simple: Employers can allow some of the work force to spend part of the workweek at a remote site, often — but not always — linked to the office via micro or terminal over phone lines. The employer benefits through improved recruiting, a retention of key staff, improved productivity and reduced office space costs.

Employees also come out ahead with less expense and wear and tear from commuting, a more flexible work schedule and greater opportunities for those who, for many reasons, cannot come into the office five days every week. The key to successful implementation is to focus on the human resource and supervisory issues because telecommuting is rarely a technical challenge today.

There are five major reasons why the spread of micros will hasten the spread of telecommuting. Remote work may not have been what the designers of today's micros had in mind, but it is one more way to take advantage of this technology.

■ The job is in the machine. Micros are shrinking the geography of the professional's work space. As more white-collar workers begin to rely on micros as integral parts of their jobs, they rely less on the papers, files and other materials spread throughout the office.

This is not another pitch for the paperless office — paper manufacturers should not lose any sleep over the spread of micros. But the fact is that file and data base access, computing power, report and graphics generation, electronic mail, data base management and word processing can all be done in many cases with just a micro and a phone line. The micro frees the office worker from the confines of the office.

Despite the micro's progress, telecommuting's weaknesses are micro-mainframe links and telecommunications links. Those two are the glue that holds micro-based remote work together. Right now, that glue does not always stick too well. Hence, because many actual and potential telecommuting applications involve stand-alone micro work or fairly routine dial-up access with appropriate security features, these weak links may be problematic. They are not, however, serious obstacles across the board.

■ Smaller is (getting) better. We're making headway when a micro can be carried in a briefcase instead of on a luggage cart. "Portable" is losing its status as a euphemism for "luggable" when it comes to micros. For example, the buyer's guide in the March 1986 issue of "Pico: The Briefcase Computer Report" lists 32 models, the heaviest of which weighs 14 pounds. And these are just the ones classified as briefcase models; highly portable machines like the Apple Computer, Inc. Apple IIc or the IBM PCjr are not even included.

The emergence of these smaller machines is a plus for telecommuting even though most people that work at home several days a week use micros or terminals that stay at home. The added advantage of the briefcase or laptop model is to open up remote work possibilities for people who might only want or need to be off site sporadically.

Instead of just taking home briefcases, these people will take home briefcases with micros in them. Once they see the pluses of working at home, some of them will evolve into

See WORK SR/34

Gordon is president of Gil Gordon Associates in Monmouth Junction, N.J., and specializes in implementation of telecommuting programs. He is also editor of the monthly newsletter "Telecommuting Review," published by Telespan Publishing.

Lotus on a VAX?

dBASE II on a VAX?
Friday! on a Micro VAX?
Condor on a PDP-11?
PFS:File on a PRO?
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QuickCode on a Micro VAX?
Spellbinder on a VAX?
WordStar on an MV10000?
Rbase 4000 on a VAX?
Multiplan on a PDP-11?
PL/M on a VAX?
SuperCalc 3 on a PRO?
T/Maker Integrated on a VAX?
MS BASIC on a Micro VAX?
Milestone on a PDP-11?
Palantir on a PDP-11?
SpellStar on a PRO?
MailMerge on a PDP-11?
PMS II on a VAX?
dBASE II on a PDP-11?
Lotus 1-2-3 on a PDP-11?
Open Access on a PRO?
MS FORTRAN on a VAX?
Condor on an MV10000?
Multiplan on a PDP-11?
WordStar on a VAX?
SuperCalc 2 on an Eclipse?
PertMaster on a PRO?
Palantir on a VAX?
QuickCode on a PDP-11?
DISC-DBL on a VAX?
PerfectWriter on a PDP-11?
WordStar on a PDP-11?
Spellbinder on an Eclipse?
Friday! on a VAX?
PerfectWriter on a PRO?
RM/COBOL on a PDP-11?
RTCS/UDI on a VAX?
Mass-11 on a PDP-11?
Milestone on an Eclipse?
Lotus 1-2-3 on a Micro VAX?
Peachtree on a VAX?
SpellStar on a Micro VAX?
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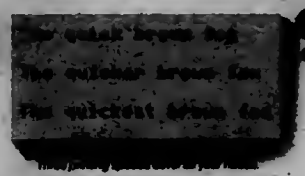

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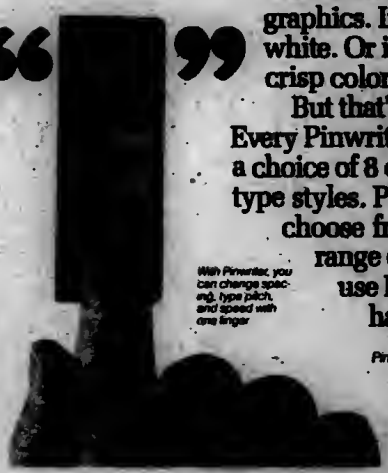

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Special Report

Managers must make building communications nets

By Emily Johnston
Special to CW‡

If you think that the microcomputer is the bane of the data processing director, that its proliferation spells the end of central control of the information resource, that it is an additional burden on DP people and that it reduces the DP department's authority and importance, think again.

In reality, the microcomputer is the best asset the DP department could have.

Conjure up this scenario: In a large room filled with mainframes people are gathering papers from the printer, looking at CRTs, mounting tapes or reading the latest *Computerworld*.

They have plenty of time to evaluate and plan the installation of the latest operating system release. All of the tapes are hung in their proper slot. Vivaldi plays on the radio.

> *DP managers must sit down with the users and find out what their needs are.*

Hard to do, isn't it? Why, you ask, are these people not tearing their hair out trying to generate that important financial report for the president of the company? Why are there no data entry people or field engineers? Why is the console not beeping that the queues are full? Why is there no three-piece-suit-type person banging his fist on the operations manager's desk? Why is the systems programmer not paging frantically through manuals?

In the usual computing environment, the user may be sitting at his terminal tying up machine resources or patiently explaining to the applications programmer why it is imperative that his output be printed sideways on the page. Perhaps last week the user filled the job and print queues with reports that no one will ever read, and one of those jobs wiped out half the data because he entered the wrong option.

The hypothetical computer room mentioned earlier is quiet because its users are not doing these things. Instead, one user is running a spreadsheet program to generate a financial report. Another is using a word processor to write a proposal for a potential contract. Others are using micros to manage the cafeteria budget, update the spare-parts inventory or sort the customer list by geographic location. In short, the users are being productive.

Can you imagine what those applications would do to a mainframe? Forty people using an interrupt-driven word-processing package, 20 more using rapid-screen-refreshed spreadsheets, 30 people tying up the disks with data base queries, and DP personnel running a payroll for 14,000 people back in the computer room would bring a mainframe to its knees.

From an efficiency viewpoint, the mainframe environment is well rid of these smaller applications. After all, mainframe resources are really needed to do corporate payroll, general ledger, cost allocations across departments, job costing, scheduling and billing.

All these are large batch jobs, requiring input from all the corporate data bases and generating stacks of output measured in feet.

The key to success

The key to achieving the calm computer room environment depicted above is communications — hardware communications — so that users can get current information from the mainframe

Johnston is president of Carroll Computer Consultants, a Westminster, Md. consulting firm.

Special Report

a top priority to take full advantage of micros' assets

to work with their micros and clear the lines of employee communication. If these communications networks are to work, planning is vital to their success.

It is in this stage that the DP department becomes the hub of the corporate wheel; it is the DP department that does the planning.

Since the DP staff has provided user services for a while, it's fair to assume they will understand the users' computing requirements.

Determining needs

To facilitate this, DP managers must sit down with the users and find out what their needs are and what central data they will need to do their work.

Armed with this information and its knowledge of the company and its general business plan, the DP group can apply its hardware and software expertise to the determination of systems requirements.

This is not just a matter of selecting microcomputer hardware and software — the DP staff must consider communications protocols and networks, file formats, shared data requirements and security problems.

They must consider the level of sophistication of the users and the psychological and ergonomic aspects of this endeavor. It's not going to be easy.

These plans all center around the communications network — the DP manager must decide whether the company should install a local-area network, use dial-up or dedicated telephone lines, stick with good old-fashioned cabling or implement some mix of these.

Next, the DP group has to set up access procedures, create procedure files, determine read/write authorizations and worry about communications software and data base security.

Problems solvable

A bundle of problems must be addressed, but they are able to be solved with the liberal application of knowledge, research and cooperation.

The benefit of a system such as this is that the users will manage their own department budgets and use a canned procedure to update the corporate budget with

> ***"The DP department will only have to concern itself with keeping the facility tuned and working properly, running payrolls and voucher checks and administering the central data bases."***

department totals.

The inventory or customer list of one department can be cross-checked against such lists of others for duplications.

These lists can be merged on the central facility; the inventory value is an entry in the annual report, and every customer will get a copy.

DP concerns

The DP department will only have to concern itself with keeping the facility tuned and working properly, running payrolls and voucher checks and administering the central data bases.

In addition, the staff will update systems and get hardware fixed or replaced.

At this point, each person is doing the job he knows best and has the proper tools to do so. Each machine is devoted to the tasks it does most efficiently. Nobody is fighting over resources or priority.

The managers have up-to-date information whenever they want it; the secretaries have quadrupled their output but not their hours; the sales force has organized customer lists; and the finance office knows who owes what.

Special Report

XEROX from SR/7

If this market broadening occurs, Apple will benefit. While IBM captures the character-based users, and Digital Research and Microsoft battle for the graphics-based users of Personal Computers, Apple will succeed by selling to the growing number of users who want the visual interface but also want an alternative to IBM hardware.

In addition, as major independent software vendors begin shipping applications designed to take advantage of the new visual environments, the end user will become the ultimate beneficiary of the competition among the operating environment vendors.

As hardware and software vendors adapt their operating environment offerings to the needs of their target markets, users will have an ever-widening variety of traditional character-oriented and new graphics-oriented applications from which to choose.

Applications aimed at the novice user will continue to become dramatically easier to use. Applications aimed at the sophisticated user will offer an increasing level of speed and power to do complex computing tasks previously performed only on mainframes.

> ***Apple will succeed by selling to the growing number of users who want the visual interface but also want an alternative to IBM hardware.***

COPY from SR/8

protection schemes, since these copiers are capable of recognizing and copying illegal data on protected diskettes.

In response, vendors have been developing increasingly sophisticated copy protection schemes, and the bit copier companies have been following with more sophisticated copier programs.

This war has escalated to ridiculous heights. One company has developed a copy protection scheme which will wipe out a system's hard disk files if it detects the use of illegally copied software. In response, a bit copier company claims to have found a way to beat that protection scheme and provide general hard-disk protection from such programs.

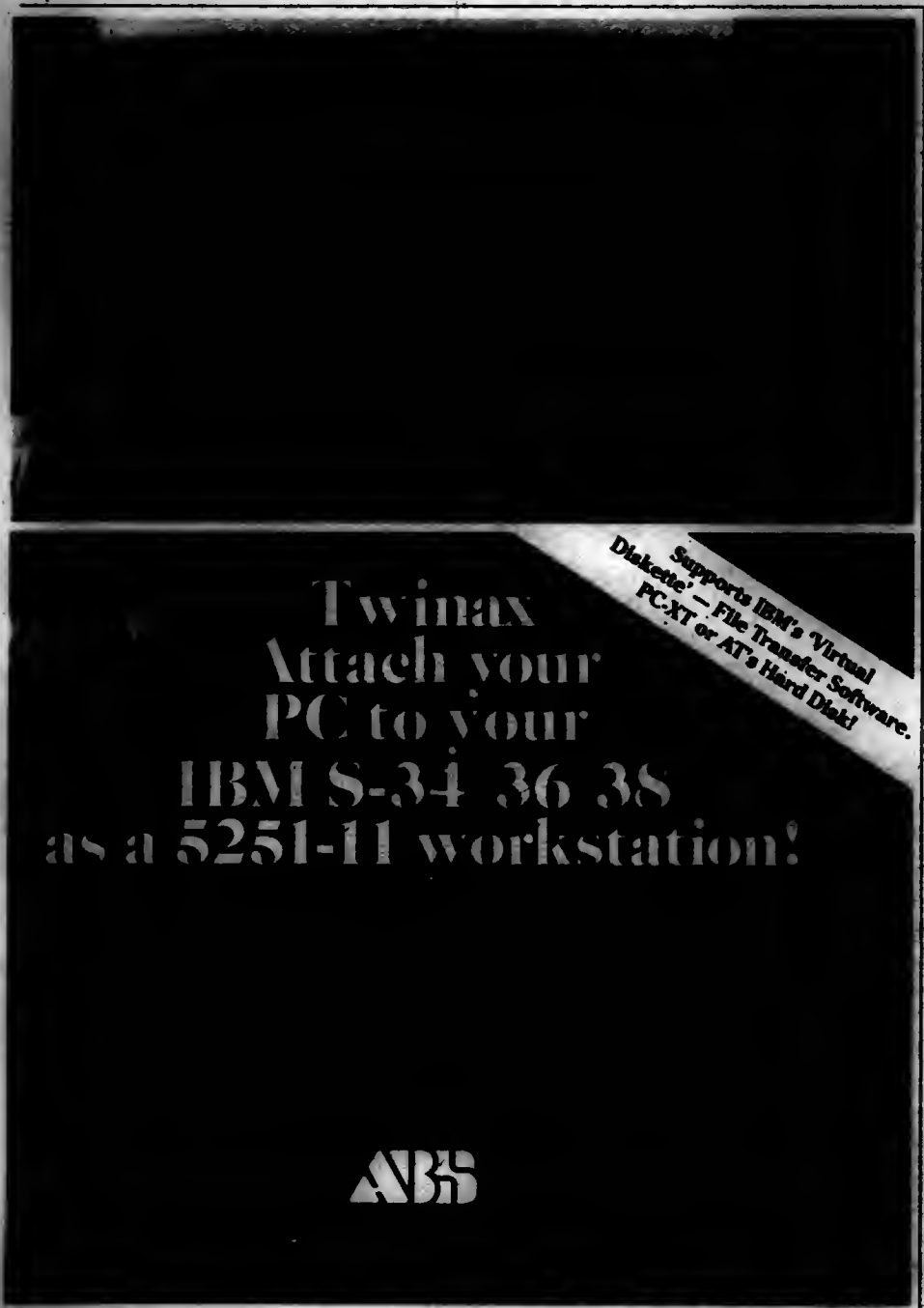
The most common objection to copy protection is that it inconveniences the legitimate user. Many software protection schemes require continued use of diskettes, even by a user with a hard disk, such as that on an IBM Personal Computer XT. Others require a lengthy and complex installation procedure, which novice users often find baffling.

Ironically, studies conducted by Future Research, Inc., a market research firm, indicate that copy-protected software diskettes are being copied and used illegally almost as frequently as totally unprotected ones. Users also have complained so loudly about the hassles that vendors are beginning to abandon copy protection schemes.

One of the most spectacular reversals came in January of this year when Micropro decided to remove copy protection from its Wordstar 2000 word processor product. The software had been out only a couple of weeks when user complaints about the lengthy installation period became so great that the firm announced that everyone who had bought the product would be entitled to free unprotected diskettes of the same product. This is probably the most brief copy protection policy in history.

There is a solution in sight, and it has to do with a new form of licensing now being made available to companies by some vendors. Suppose a company plans to buy 30 to 40 copies of a software product. They talk with the vendor to obtain a site license, which gives them the right to make unlimited copies of the software for use at a given site or sites. Many of these site licenses also permit an employee to make a copy to use on his own home computer for noncommercial purposes. They pay one fixed fee for this right.

Purchasers may have to do some research and negotiation to get a site licensing agreement, however.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(C) Accessible Tables:	40	10
Password Security:	Yes	No
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Special Report

Sporting goods chain scores with in-house budget tools

CARTERET, N.J. — A sporting goods retailer here hiked the efficiency of its budgeting procedures when it switched from an outside time-sharing service to an in-house system based on a general ledger software package and a micro-mainframe link.

Until recently, Herman's World of Sporting Goods, a retailer that operates more than 115 stores, relied on the time-sharing system for all of its modeling procedures and financial analyses. The firm had a homegrown general ledger system that ran in house on a 16M-byte IBM 4381, but the system did not support any budgeting capabilities. When Herman's needed a budget, it sent a tape with its financial data to the time-sharing service bureau for processing.

The cost of the service was prohibitive, turnaround time was slow, and the process was inefficient, according to Debbie Krochalis, Herman's manager of financial systems.

"When we were on time-sharing, actuals had to be loaded into the data base, resulting in duplication of data in the in-house and time-sharing systems," she said. "Additionally, the in-house general ledger didn't have access to the budget data developed on time-sharing."

In April 1983, Herman's began looking for a new general ledger system. Krochalis said the firm had the following two primary goals for the software:

- To replace the outmoded homegrown general ledger — a batch processing system — with software that provided on-line capabilities, a variety of report writers and other sophisticated features.
- To phase out reliance on the time-sharing service by providing budgeting capabilities.

Link support affects choice

Support for micro-mainframe data transfer also weighed as a factor in Herman's choice of general ledger systems, Krochalis said. "It was certainly something I was looking for."

After a five-month search, the firm purchased McCormack & Dodge Corp.'s GL:Millennium general ledger package, which offered support for PC Link, the vendor's micro-mainframe link.

Herman's installed the general ledger software in January 1984 and brought it into full production four months later. Last September, the firm installed PC Link on an IBM Personal Computer in the finance department.

That month, analysts in the department began using the link to prepare Herman's budget for 1986, which was due in early December. They downloaded actual financial data from the general ledger system to the Personal Computer, performed budget analyses with Lotus Development Corp.'s 1-2-3 and uploaded budget data into the general ledger.

Krochalis explained that the procedure was more efficient than the one the company followed with the time-sharing service and that it saved her analysts time.

Herman's maintains PC Link on one Personal Computer, which is hard-wired to the mainframe and fitted with a Digital Communications Associates, Inc. Irma board. During the 1985 budget analyses, workers in the finance department made duplicates of the disk on which PC Link had captured financial data from the mainframe. They then managed the copied data on stand-alone Personal Computers with 1-2-3.

The time savings this procedure allowed came from two sources, according to Krochalis. First, because analysts were familiar with Lotus, they could proceed without much instruction. Second, the disk copies allowed a number of people to prepare budgets simultaneously.

BASF

Special Report

Terminal emulators conquer space shuttle supplier's

TARRYTOWN, N.Y. — For a firm here that supplies parts for the National Aeronautics and Space Administration's space shuttle and other aircraft, giving microcomputer users access to mainframe data was a matter of finding the right stuff: specifically, the right medium for data extraction and file transfer.

Simmonds Precision, a subsidiary of Hercules, Inc., manufactures fuel gauges, ignition systems and other devices for commercial and military aircraft. A year and a half ago, the firm looked for a way to download operations-related data from mainframes to microcomputers to distribute computing tasks.

According to Dave Predenburg, manager of product assurance data systems for Simmonds' Instrument Systems Division: "We wanted to federate some of the mainframe processing power."

That task centered on finding a common medium with which to transfer data. "You don't have 5-in. diskettes on a mainframe; on [personal computers] you don't have tape drives," Predenburg said. "You have to have some [common] medium."

In September 1983, Simmonds purchased a number of terminal emulation boards that allowed coaxial wire to serve as that medium. The emulators, Irma boards from Digital Communications Associates, Inc., allow microcomputers that are hard wired to communications controllers to appear to Simmonds' 8M-byte IBM 4341 mainframe as 3270-type terminals.

Extract data from mainframe

In terminal-emulation mode, the microcomputers can extract data from the mainframe and use it for local processing tasks. Users whose micros are fitted with the boards can also send files to the mainframe, where other users can access them.

About 25 of Simmonds' 60 IBM Personal Computers, Personal Computer XTs and Compaq Computer Corp. micros are fitted with the emulation boards. Simmonds uses Pansophic Systems, Inc.'s Easytrieve software for data extraction and Panlink for file transfer.

Employees in the firm's headquarters here and at its Instruments Systems Division in Vergennes, Vt., use the extraction and transfer capabilities to help them perform a number of different tasks as follows:

■ Financial analysts at Simmonds' headquarters use their micros in terminal-emulation mode to pull cost data from the mainframe. They then switch back to a local processing mode and use Lotus Development Corp.'s 1-2-3 to massage the data and determine pricing strategies.

■ Parts inspectors in Vergennes use their machines as personal computers for voice entry during inspections; they call out the results of

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Special Report

data transfer, processing limitations

their inspections, and the machines record the information. The inspectors also use their machines as terminals to query mainframe data bases for scheduling information.

■ Clerical workers in the Instrument Systems Division in Vergennes use their personal computers as terminals for data entry to mainframe data bases and as local processors for data entry to personal computer data bases. They also retrieve mainframe files and manage them with microcomputer word processing software.

■ Software developers in the Instrument Systems Division use their machines both as micros for microcomputer software development and as 3270-type terminals for mainframe software development.

Fredenburg said that in all these applications, the firm benefits by off-loading processing from the mainframe, by getting dual use out of its microcomputers and by eliminating the need to rekey data.

Saves money every day

By off-loading processing tasks, such as software development, to the micros, the firm saves money every day in CPU time and channel costs, Fredenburg said. Simmonds also saves in the long run because it can distribute its processing load and therefore eliminate the need for frequent mainframe upgrades, he said.

By giving users both terminal and personal computer capabilities at the same workstation, the firm gets a logistical benefit. "You don't have to have two machines there to get the job done," Fredenburg explained.

By eliminating the need to key data into microcomputers, Simmonds has prevented unnecessary labor. But more important, Fredenburg said, the firm has been able to implement applications, such as the generation of reports from mainframe parts lists, that it could not set up without the ability to download data for local processing.

"There is really no way to take a file that has 300,000 characters in it and key it into a [personal computer]," he explained.

Simmonds is a supplier of parts for Nasa's space shuttle.

MIS managers must go with micro network flow

Influx of personal computers presents opportunity to enhance corporate role

By James V. Bryce
Special to CW‡

What was once a slow and almost silent push for communications among micros has suddenly gained momentum. The local-area network has brought the desire for communications to the forefront of the industry.

The MIS professional who attempts to stem the influx of micros and networks is doomed to failure. This resistance, based on the fear of losing power or position, does not address the inevitable change that microcomputer networks portend.

Distributed processing will put substantial power in the hands of users.

Those professionals who view the shift as an opportunity for cooperation and growth, will find their positions substantially improved, albeit different. MIS managers who are willing to change with the new technology will prosper.

The technology of micro-mainframe connection consists of a number of facets, including the following:

- Physical connections.
- Software.
- Security.
- Auditing.
- Data integrity.

MIS managers who want to improve their positions and change with the new technology must consider each of these.

Physical connections. As a beginning, the manager must find some way to connect the micro to the host computer. The first connections to become available, and the ones most frequently used, allow the micro to emulate a terminal and otherwise ignore the power resident at the user's desk. Communications are transmitted from the terminal to the host, which frees the user from the need to have both a terminal and a micro on his desk.

Organizations pay a substantial price for this freedom. The cost of many of the hardware and software packages involved in emulation is a considerable percentage of the cost of a standard terminal, yet the performance of the micro/terminal is much slower than that of a standard tube. From the user's point of view, this disadvantage is compounded by the gymnastics that are required to make the micro keyboard work the way a terminal keyboard does.

Early micro-mainframe communications links relied on existing systems for terminal connection to the host. More current schemes feature channel attachment of local-area networks to the host. These attachments offer wider possibilities to the network manager, including the capability for peer-to-peer communications among all computers on the network.

Software. Gradually, vendors are developing products that serve to heighten the utility of the connection beyond that of simple terminal emulation.

Several programs on the market permit disks or printers to capture a screen load of information. Other programs allow users to transfer entire files to disk with a few key strokes. More exciting programs emphasize the dominance of either the micro or the mainframe.

Among micro-oriented software offerings, the most exciting for many users is the virtual diskette server. The virtual server, portions of which run on both the mainframe and the micro, turns the mainframe into a giant file server for the microcomputer.

Micro users see the mainframe as an almost limitless collection of disk drives and floppies they can access. More sophisticated versions of these programs allow other mainframe programs to insert and extract data from the virtual diskettes.

This insertion and extraction process is a gray area between the micro and the mainframe orientations. Cooperative processing between the microcomputer and the mainframe, carefully governed by the mainframe, allows micros to extract information contained in complex mainframe data bases.

Currently, programs that offer these capabilities are the top of the heap in micro-mainframe links; as such, vendors demand top dollar for them.

Security. The emergence of links that go beyond simple terminal emulation leads to the need for security measures beyond those available for terminal environments. Security can be obtained at the level of the host, the communications system, the micro and the user.

At each level above user level, the MIS manager can institute passwords, access permits and hidden files to block unauthorized activities.

At the micro level, physical security devices like key locks may be effective. Many networks allow for the use of micros without disk drives and thereby prevent the unauthorized acquisition of entire disks worth of data.

At the user level, the MIS manager can maintain profiles that keep track of the kinds of access an employee typically uses and flag any authorized but unusual access attempts. To provide additional security, managers can require employees to use physical identifications, such as magnetic strip badges, to log on to a micro.

Data encryption also offers substantial protection, but the time necessary for encryption and decryption may offset any gain.

Auditing. When every micro in an organization has access to the corporate data base, the potential for the creation of new ideas is great. Unfortunately, the potential for total confusion is equally as great.

Downloading an original data base, or a portion of the original data base, into a micro produces two copies of the same information, assuming no errors occur during the downloading. The micro user works with his copy, using a spreadsheet or some other projection software, and prints out his results.

Printouts from the micro look just as good to management as those produced by the mainframe, but the data may not be as accurate. Should management then depend on micro analyses of the mainframe data base?

The possibilities for errors in communications or calculations are too great to allow such dependence. But the speed, flexibility and creativity of micros linked to the mainframe data base are vital to the strength of the company. The solution, or at least a partial solution, is to require that an audit trail be produced.

With an audit trail, management can examine the results of micro operations, keeping watch for the limitations imposed by the source and the communications involved.

The only data base an organization should consider accurate is the one that resides on the mainframe. This data base is routinely updated and backed up. Data that is downloaded to microcomputers is synchronized only at the time of the downloading.

Data integrity. Micro-mainframe communications creates a new role for the MIS professional, that of distributed data base administrator. As part of this role, the MIS manager must devise a way to allow users to upload data.

Data that micro users supply to mainframe data bases can serve as a valuable corporate resource. This data, however, is subject to substantial corruption.

At the least, MIS staff members must check data for transmission errors to make sure that the data the mainframe receives is consistent with the data the micro sent. One way of doing this is to isolate data and compare it line by line, using encoding algorithms to detect possible errors.

Final responsibility must rest with the MIS manager, who will provide controls and review users' requests to upload data.

Bryce is president of Netserv, Inc. in Austin, Texas, a consulting, training and service firm specializing in local-area networks.

Special Report

Micro, mainframe software maintenance issues similar

By Girish Parikh
Special to CW

Software maintenance can be defined as corrective, adaptive or perfective labor performed on either custom-designed or packaged software. In the microcomputer software world, software support, such as answering user questions on program functions and documentation, is also included under the umbrella of software maintenance.

Maintaining microcomputer software that was developed in-house can be similar to maintaining mainframe software that was custom developed. Programs and systems developed in-house may suffer from inadequate documentation, lack of modifiability or poor logic and design.

Often at considerable expense, DP managers learned these mainframe software maintenance lessons:

- One way to reduce maintenance problems during software development is to implement better analysis, design, technical reviews and walkthroughs.
- Well-maintained and current documentation is a necessity.
- Selecting and using software maintenance tools, like documentation, is important.
- Programmers and technicians should be educated and trained in software maintenance.
- It is important to find and keep competent maintenance programmers.

If these solutions are not heeded in the development of homegrown microcomputer software, support and maintenance for the software will be very difficult.

One way organizations can support microcomputer software is to form an information center. The information center's technical staff can help users develop and maintain homegrown software. A support group in the information center can develop and provide user training and also work with the vendors of software packages on the upkeep of off-the-shelf software.

While the use of mainframe software packages is growing, comparatively inexpensive software packages are the life of most microcomputer systems.

User support is major issue

Supporting users of popular microcomputer packages is a major issue in microcomputer software support and maintenance. Corporate users may be located at geographically diverse locations.

One maintenance problem unique to packaged software is that of promptly distributing any changes or enhanced versions of software with updated documentation.

In addition to support received from the information center, vendors also can provide users with, to a certain extent, maintenance support. Some of the innovative solutions being used by vendors include electronic bulletin boards and phone support on a pay-as-you-go basis.

Other vendor maintenance options are available. A recent *Infoworld* reported that Solvation, Inc., located in Southboro, Mass., is currently developing an IBM Personal Computer program called The Buddy System, "which allows technicians to provide on-line support without leaving their offices."

Special interest groups (SIG) to support and educate users are also started by microcomputer software vendors such as Borland International and Lotus Development Corp. on Compuserve, Inc.'s Compuserve, the Columbus, Ohio-based network.

Another interesting software maintenance issue is the role microcomputers are playing in mainframe software maintenance. With the micro-mainframe links, micros have already entered the mainframe world. In the future, this link with the mainframes is likely to strengthen. Micros may also be used as stand-alone machines to support mainframe software maintenance. The following are some possible microcomputer applications in this area:

- Moving mainframe applications to micros.
- Managing mainframe software maintenance with the help of micros.
- Estimating time for maintenance work using a microcomputer software package for the estimation.
- Measuring maintenance programming productivity and maintaining productivity data bases.
- Expert software maintenance systems on micros and expert systems for forecasting programmer turnover based on behavior patterns of employees.
- Employee turnover contingency planning system.
- Downloading Cobol programs from mainframe to micro, performing modifications on the micro and uploading to the mainframe.
- Restructuring Cobol (and other language) programs on micros.
- Dedicated micros for documentation.
- Using micros for education and training in software maintenance.

Parikh is a Chicago-based consultant, lecturer and writer. His books include Techniques of Program and System Maintenance *and* Tutorial on Software Maintenance, *with Nicholas Zvegintzov.*

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Special Report

Portables let auditors bring the office to their work

HOUSTON — Auditors at a Big Eight accounting firm's office here take portable personal computers with them when they visit the offices of client companies to examine corporate finances.

The Houston office of Price Waterhouse & Co. maintains a pool of about 80 Compaq Computer Corp. portable microcomputers for its auditors, who spend about 70% of their time working on location. According to Bill Powell, managing partner at Price Waterhouse, "Portable personal computers are a vital productivity tool."

Price Waterhouse has stored proprietary auditing software, as well as Lotus Development Corp.'s 1-2-3 and Visicorp's Visi Word, on the portables' hard disks so that auditors can carry with them the tools they need to perform their work.

Auditors take up residence in clients' offices for anywhere from two weeks to three months while they examine a client's business transactions. They check accounts receivable, for example, by asking the client's customers to verify that they have been billed for the amounts the client recorded. The auditors also count inventories, do check reconciliations with the client's bank and delve into other facets of the client's operations in the same manner.

Price Waterhouse

In the end, Powell said, their analyses attest that the financial statements the client releases to its shareholders are accurate. The software embedded on the portable micros' hard disks helps the auditors choose statistical samples of transactions to examine, test their samples, extrapolate them to the whole, consolidate their findings and format final reports. "It's a great time saver," Powell said.

Proprietary software — the Audit Practice Support System developed by Price Waterhouse for its users — does most of the work and takes up about 6M bytes of the Compaq portables' 10M-byte hard disks, leaving the remaining memory for processing tasks.

The firm chose Compaq portables because they had the hard-disk capacity to support the proprietary software, yet were small enough to move from site to site, Powell said. "They're full-blown, full-powered [personal computers] that can be used . . . in our clients' offices."

He said the ability to carry micros to clients' offices benefits the firm in the following ways:

Productivity. Microcomputers increase auditors' productivity by automating work that they once did by hand. Powell said Price Waterhouse had not calculated exact dollar savings, but he offered this application as an example. When Powell visited a client's office after hours recently, he saw a Compaq running unattended. A Price Waterhouse auditor working at the site explained that the machine had been programmed to run a series of calculations — a job that required about two hours of processing time — and print out the results overnight so they would be available the next morning. Without the computer, Powell said, all that would be done manually.

Convenience. Portables enable auditors to perform operations wherever they are working. Before the Houston office began using portables two years ago, its auditors had to tap into Price Waterhouse's corporate mainframes, an IBM 4341 and a Digital Equipment Corp. 2060, at the firm's national administrative office in Tampa, Fla., which required that they leave client offices where they were stationed and return to the home office.

Powell said auditors still need to access the mainframes for some complex operations but added that Price Waterhouse is working to make its portables self-sufficient by outfitting them with all the programs auditors need. "More and more," he said, "those are going on the hard disk."

If an auditor working out of a client office needs access to the corporate mainframes, he can use a modem and phone lines for dial-up access.

Availability. Many of Price Waterhouse's clients are just beginning to consider office automation and have yet to install micros, Powell said. Clients who have personal computers do not want to lend them to auditors. "They're very stingy," he said, explaining that most firms that have micros use them continuously and cannot give up processing power.

In addition, he said, auditors do not have the time to load Price Waterhouse's proprietary software onto the hard disk of a client's personal computer and erase the programs from the computer's memory after they complete an audit. The software comprises about 15 floppy disks worth of programs and takes about two hours to load onto a hard disk.

Collectively, the benefits have allowed Price Waterhouse to stay competitive with other Big Eight accounting firms, which, Powell said, are "heavily into micros because they're not stupid."

The firm maintains 15 Compaq portables for employees who calculate tax returns for clients, but those personnel use the portables less frequently than the auditors do, Powell said.

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Special Report

Savings and loan industry reveals DP requirements

Nationwide survey shows preferences for hardware, software, user training

By Kenneth Grunewig
Special to CW

A nationwide survey of savings institutions revealed that this industry overwhelmingly favors the IBM Personal Computer and Lotus Development Corp.'s 1-2-3, purchases 40% of their hardware and software through computer stores and seeks external training programs for user education.

The savings institution industry, which is composed of more than 4,000 savings and loan associations and mutual savings banks, has evolved to meet the home financing and savings needs of households. Historically, these needs were met in a regulated and protected arena.

Today, however, complex variable-rate financial instruments have replaced their fixed-rate counterparts and, due to financial industry deregulation, savings institutions have many new competitors. On the other hand, savings institutions are no longer limited simply to providing mortgages and passbook savings accounts; they are now active competitors for checking account and credit card services.

Savings institutions have had to respond to this competitive and complex business environment with more effective information systems. How the personal computer is being used to meet the institutions' information needs was the focus of an industry-wide survey conducted by Intek Management Corp., a financial industries marketing research firm.

Intek mailed questionnaires to senior executives of more than 4,000 institutions. The 434 respondents ranged in size from less than $25 million to greater than $1 billion in total assets. All states, with the exception of Maine, were represented.

Survey results

How many personal computers are in use or planned?

More than 80% of the savings institutions surveyed had at least one personal computer. Nearly 50% had two or more, and more than 60% of the respondents planned to add additional personal computers during the next 12 months (Figure 1).

Which personal computers are being used by savings institutions?

Seventy-four percent of the survey respondents reported that they use IBM and IBM-compatible personal computers.

Apple Computer, Inc.'s Apple computer was the next most popular personal computer among the respondents and was used by 31% of the institutions. Figure 2 identifies which computers are currently installed. Since these institutions typically had more than one system, responses exceed 100%.

What software packages are they currently using?

The spreadsheet application was the most common use for the personal computer. Lotus' 1-2-3 was selected by 46.5% of the sample; Software Arts, Inc. VisiCalc was a distant second, with approximately 21% of the institutions using it. Not only is 1-2-3 the leading spreadsheet package, but it was also the most popular data base management and graphics applications package.

Are there formal policies for the selection of hardware and software?

Most institutions lacked formal policies for selecting hardware and software, and they had not established corporate standards. Only about 20% of the end users consulted with the computer staff before purchasing hardware or software. The majority of purchases (40%) were made through retail computer stores. It appears that the retail computer store was instrumental in the hardware and software selection process.

Are there purchasing standards for microcomputer hardware?

Remarkably few of the savings institutions (37%) had corporatewide standards for microcomputer hardware purchases. Of those institutions that had standardized their personal computer hardware, the Personal Computer was the system of choice for 28.2%.

What software standards have they adopted?

Given its popularity within this industry, 1-2-3 was, not surprisingly, the spreadsheet standard selected by approximately 48% of the respondents. Micropro International Corp.'s Wordstar was the choice as the word processing standard for 32% of the respondents, and Ashton-Tate's Dbase II was selected as the data base management standard by 25% of the respondents.

How extensively is the personal computer used for communications?

The savings institutions have been slow to use the communications capabilities of the personal computer. Only 18% of the installations surveyed used their in-house mainframe or minicomputer systems for communications. Even though communications is becoming an important feature of the personal computer, the industry does not plan to become involved in this area.

The smaller and mid-size savings institutions rely upon service bureaus for their processing requirements. This may explain why so few plan to communicate with in-house systems. Figure 3 illustrates the current and planned communications capabilities.

Which external information services are utilized?

The savings institution industry has been slow to use outside data base services. Currently, 17% subscribe to information services. The most popular are Telerate (7.1%), Dow Jones News Retrieval (3.5%) and Interline (2.3%).

What are the applications personal computers are used for?

Spreadsheet applications, such as budgeting and financial forecasting, asset/liability management and investment analysis, were among the most popular ones.

These financial applications are indicative of why 1-2-3 and the Personal Computer are so popular within the savings institution industry. Forty-six percent of the sample group used the personal computer for word processing applications; savings institutions are replacing the dedicated word processors with personal computers whenever practical. Figure 4 describes which applications are being automated by the personal computer.

What are the training methods used and preferred?

Most general office and professional staff at savings institutions rely upon self-training, but few prefer this method of learning. Most users prefer either a formal internal or external training program to assist them in learning to use their automated systems.

It is interesting to note that external training programs were preferred by the majority of professional staff members above all other methods.

The above selections were a sampling of key results from the survey tabulations that were thought to be of special interest to *Computerworld* readers.

A complimentary copy of the complete survey results may be requested from Intek, which is located at Suite 101, 1950 Addison St., Berkeley, Calif. 94704.

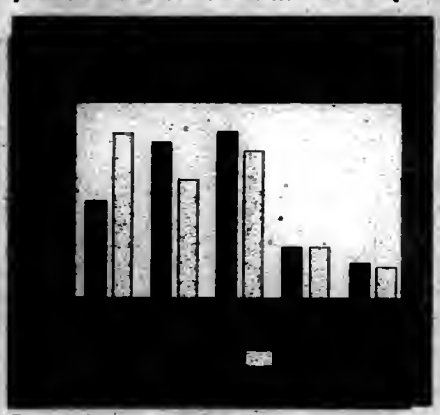

Figure 1. Of the savings institutions surveyed, 80% had at least one micro and 60% planned to add more micros.

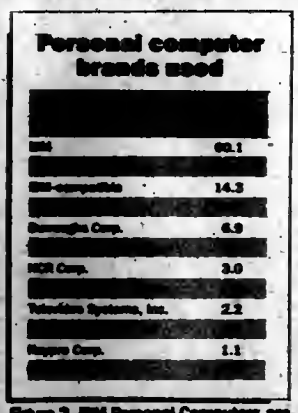

Figure 2. IBM Personal Computers are the most used micro in this market.

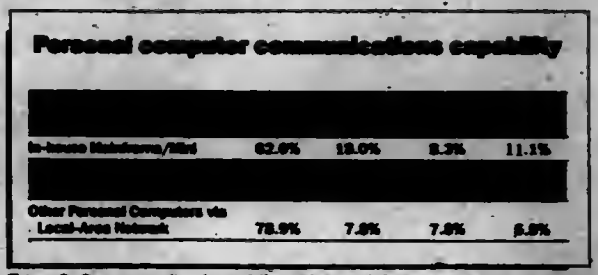
Personal computer communications capability
In-house Mainframe/Mini 62.6% 13.0% 8.3% 11.1%
Other Personal Computers via Local-Area Network 78.9% 7.8% 7.8% 5.5%

Figure 3. Survey results showed that micro-mainframe communications are not a priority for most survey respondents.

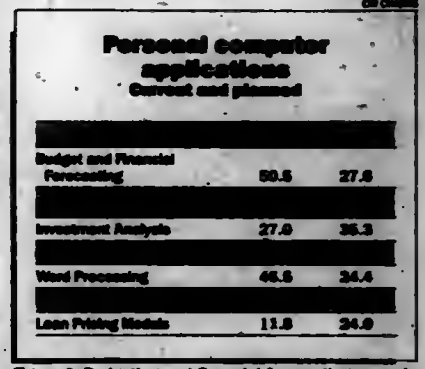
Personal computer applications
Current and planned
Budget and Financial Forecasting 50.5 27.8
Investment Analysis 27.0 35.3
Word Processing 46.5 34.4
Laser Printer Models 11.8 24.0

Figure 4. Budgeting and financial forecasting spreadsheets are the most popular applications. The current percentage column depicts the number of survey respondents using each application; the planned percentage column describes those respondents planning to add those applications.

Grunewig is the president and founder of Intek Management Corp., which provides market studies and strategic plans for the financial and investment services industries and computer software and services firms.

Special Report

Increased personal computer use demands new breed of manager

By Constance Knapp
Special to CW‡

As microcomputers continue to infiltrate the corporate ranks, many large companies are scurrying to find a way to manage the acquisition and use of these machines. In many cases, a management position has been created — that of the microcomputer manager.

Today, there is an increasing interest in this new MIS position. Who are the micro managers? What do they do? And what corporations are using them? After all, barely two years ago, the position did not exist.

What does the micro manager do? This question would be answered differently by nearly every company. For example, at Time, Inc., personal computers are controlled and supported by the information systems development area. This includes training, technical assistance and so forth. Even supplies are "purchased" at the computer store — a Time department.

At *The New York Times*, personal computers are controlled by users, with MIS setting standards and receiving information. Each department has its own micro maven, who, although not called a micro manager, manages all the personal computers for the department. This job includes selecting software, training employees and requesting equipment. Actual ordering and purchasing are done by MIS.

The Equitable Life Assurance Society has moved toward decentralization of all its functions, and micros are no exception. Each subsidiary and operating group has its own micro manager who is truly independent. Some areas use IBM machines only; some use Wang Laboratories, Inc. equipment; and others mix and match as they see fit. All decisions are made at the operating level.

A micro manager at equitable must be fully conversant in all aspects of this new technology. Some departments even publish newsletters to share their hard-won education with others.

As the need varies, so does the position. One microcomputer manager may be familiar with all aspects of this technology, while a coordinating micro manager may use administrative skills, rather than technical skills, to manage this computing revolution.

The future

What does the future hold for these jobs? The mere fact that the title "micro manager" has been created implies definition and, to some extent, standardization, as companies begin to actively fill these positions. Some standards will be set, along with expectations of minimum levels of knowledge.

As the personal computer revolution is controlled, some fallout may occur. Companies will reign in personal computer use, as redundant equipment is identified and eliminated. Too much money is being spent, and the results are too visible for this type of user computing to continue unchecked.

In smaller companies, the micro manager may be absorbed by the systems department. In larger companies, the position may evolve, as has that of the business analyst, as a shared function, requiring people who are well grounded in both systems skills and business knowledge.

As personal computers are taken more seriously by the data processing profession, the micro manager will be considered a professional — the job will be defined, and the wide discrepancies between the job title at different companies will be narrowed.

Knapp is a New York-based computer consultant, specializing in the selection and installation of financial software.

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Special Report

Project software lets firm keep abreast of DP overhaul

WOODLAND HILLS, Calif. — A microcomputer project management software package is helping the MIS department of a manufacturing firm here manage budgets, meet deadlines and apprise top management of progress during an ambitious DP overhaul.

The MIS department of Dataproducts Corp., a manufacturer of computer printers that logs more than $400 million in annual sales, began to restructure its worldwide information services function two years ago. Dataproducts operates five data centers in the U.S. and one each in Hong Kong, Ireland, England, Paris and Puerto Rico. The restructuring included projects to do the following:

- Standardize the firm's financial and manufacturing software systems.
- Standardize hardware and software and establish an international network to connect the system.
- Create corporate data bases.
- Establish an information center to encourage end-user computing.

"All this was — and still is — a tall order," according to William D. Strowbridge, the firm's vice-president of MIS. "It cried out for an efficient, coherent project management system to give us the planning and control support we needed." The firm's 60-member systems development and support staff handles up to 350 concurrent projects for 35 user departments.

Dataproducts had used a mainframe project management system to keep track of MIS work, but it did not fit the bill. The system was oriented to large projects, which consumed only one-quarter of the MIS staff's time, and required detail that was inappropriate for smaller jobs (Figure 1). Project leaders resisted, and the system fell into disuse.

Strowbridge and his staff set out to find a better system. Besides meeting general criteria, such as cost-effectiveness and ease of use, the system had to do the following:

- Allow for automated scheduling.
- Provide comprehensive project reports and management reports.
- Support cost accounting and user department charge-backs for MIS services.

Strowbridge said he and his staff considered both micro and mainframe software systems. "The problem we kept running into," he said, "was that the mainframe programs were too complicated to use handily, and the micro systems didn't have the functions we needed."

They eventually decided to purchase POC-IT Management Services, Inc.'s Microman, a micro software package designed for MIS project management. Dataproducts has installed copies of the software on two IBM Personal Computer XTs and plans to install a copy at each data center in June. Strowbridge said some features that attracted him to the package were its systems development methodology and its management reporting capabilities.

Figure 1. Dataproducts Corp. categorizes its projects as small, intermediate and large, according to budget. Its mainframe project management system was geared toward large projects, which account for only 25% of the MIS department's work.

Systems development methodology. Microman supports Dataproduct's development methodology, which includes only four project categories: life cycles, phases, tasks and subtasks. As such, Strowbridge said, it is not "a bureaucratic system that overcontrols the project" as Pert charts and other systems do.

Based on this setup, Dataproducts requires its systems development managers to design each of their projects as a series of discrete tasks and subtasks — jobs that require at least one week's work but not more than two week's worth and produce only one deliverable. When a task is complete, the manager receives credit for it on the system.

Strowbridge said that because the methodology is simple, it allows for flexibility. "My managers only manage a task," he explained, and they have freedom to design those tasks any way they want.

Management reports. Measurements of the MIS department's productivity are based on an achieved

See GUIDEMARK, SR/57

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Special Report

Division of labor gives MIS quick turnaround time

By Bayley Batchis
CW Staff

Dataproducts Corp.'s MIS department consists of two separate systems groups, each of which takes responsibility for defined categories of tasks.

The firm's systems development group handles all intermediate and large projects, while its product support group takes care of small development jobs and resolves any day-to-day problems that arise.

William D. Strowbridge, Dataproducts' vice-president of MIS, said the division of responsibility rests on the idea that a man cannot serve two masters.

He said that pulling MIS staff members from a large project so that they may handle a small program fix throws the large project off schedule. Similarly, devoting an entire staff's time to a large project means that problem resolution gets ignored, and users must wait months for quick fixes.

Turnaround time

During a three-year stint as a consultant, Strowbridge found substantial proof for this claim. He discovered that, in 90% of his cases, MIS departments needed about 90 days to turn around user requests for projects that, on average, required 12 man-hours of work.

"Nobody is going to wait 90 days to get 12 hours of work out of anyone," he said. So he set up Dataproducts' MIS department to avoid the frustration that users experience when they have to wait so long.

The firm's systems development and product support groups answer to different types of budget, manpower and project life-cycle restrictions (see chart), and employees in the two groups differ in their qualifications and motivations.

Strowbridge said employees in the systems development group range from entry-level programmers to high-level managers; they plan and execute long-term projects a piece at a time.

The 'green berets'

Employees in the product support group are of a different breed. They are highly skilled systems professionals who have few management aspirations but thrive on marshaling their accumulated knowledge to solve whatever problems occur. "That's a dedicated resource of 'green berets,'" Strowbridge said, "and I don't use them for any other reason."

With the breakdown in responsibilities, the MIS department has managed to meet a strict set of goals for turnaround time:

■ The systems development group arranges project budgets and completion dates with user departments. Project managers are required to stay within 5% of their budgets; they have consistently met their deadlines.

■ The product support group operates with the goal to turn around all problem resolutions within 24 hours; it has done so 99% of the time.

■ Product support staff members also aim to turn around requests for minor development projects within 21 days and to expend between 12 and 14 man-hours on these tasks. They have met these goals 99% of the time.

The MIS department arrangement has effectively reversed the situation Strowbridge saw when he consulted other firms on their operations.

"Ninety percent of the time, [when] the user uses the department," Strowbridge said, "instead of being frustrated, he's satisfied."

MIS development and support organizations Dataproducts Corp.

	Systems Development	Product Support
[redacted]		
Budget	Variable; negotiated based on estimated work	Fixed; based on previous year's budget
[redacted]		
Employee's Professional Qualifications	Range from entry-level to management	All experienced professionals with hands-on knowledge of many different systems
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CARL HENNETT

WORK from SR/10

telecommuters who regularly spend several days a week off-site.

It is easy to take potshots at some of these smaller micros — by anyone's standard they are not as easy to use or as full-featured as their larger office-based counterparts. If this market is given time to develop, however, small machines priced and designed to be remote-site workhorses will probably be available.

■ The wired work group. There is something new in the products and sales pitches from OA vendors within the last year. They are realizing that there is a middle group between individual work and divisionwide or companywide work. Micros had been aimed at the former and traditional DP systems, with updated OA features, at the latter.

As most office workers know, the immediate work group of 12 or more people is where most of the work gets done and most of the communications flows. Systems that tie together micros, file servers and printers in cohesive local networks will be well matched to the organizational reality of group work.

The advent of new micro-based systems like these — such as Apple's Macintosh Office — is another reason why telecommuting can grow. One of the myths about telecommuting is that it only means work at home; other remote sites, such as satellite offices or so-called neighborhood work centers, are just as likely and offer unique advantages.

■ Micros as commodity items. The initial push for cost-justification of individual micro purchases seems to be over at many organizations. The machines are cheaper, they are less of a novelty, and — most important — it is becoming clear how useful they are.

Ironically, as micros move up the organization ladder, it becomes harder to identify tangible benefits. Dennis Devlin, manager of emerging technologies at American Hoechst Corp., characterizes attempts to measure managerial and executive payoffs from micros as trying to count "insights per fortnight." In most cases, the benefits are there and are obvious to the people who rely on micros. The effort and cost needed to prove this can exceed the cost of the micro itself; thus, within reason micro purchases are almost an act of faith.

This leads to much wider availability of micros and acceptance of their role as necessary business tools for many office workers. Coupled with the reasons above, this means more and more people are potential telecommuters. Their work and their jobs can be as portable as they like.

■ Micros as dumb terminals. It is probably heresy to say this, but many micros are used as dumb terminals much of the time. They are not dumb terminals in the sense of a 3500 box with no computing power or internal logic — but what else would you call a micro that is used extensively for E-mail or data base access? Everybody using micros is not creating elaborate Lotus Development Corp. 1-2-3 models or using word processing software to write 20-page reports.

As the cost gap between terminals and low-end micros narrows, there is little reason not to buy a micro when faced with the choice. The computing power is a freebie — if it is used now and then, so much the better.

The person working at home will often use the micro for terminal-like purposes such as E-mail or file access. Many telecommuting professionals, such as financial analysts, certainly need the micro as a computer, not as a terminal. But others do not — much of their work may even be paper-and-pencil tasks for which the micro is only a part-time resource, used mostly for communications with coworkers and others in the central office.

Telecommuting possibilities

Even without widespread use of micros, it is entirely possible for most organizations to have up to 5% of the office work force telecommute at least several days a week.

Actual telecommuting applications today are growing quickly but are still limited, mostly because of its novelty and some misconceptions about its purposes, benefits and implementation.

The growth of micros is one factor that helps explain why some observers say they believe that 15% to 20% of the office work force could be telecommuting by 1990.

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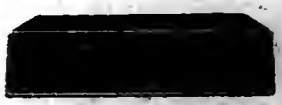

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Special Report

The information center: one approach to data security

By William M. Adney
Special to CW

Security, a challenging problem in the mainframe environment, has an added dimension of complexity with microcomputers: their location. The computing resource is now outside the safe and secure protection of a computer center. Micros can be found in executive offices, on clerks' desks and even on the factory floor.

Another facet of this problem is that these micros are also inexpensive enough to be purchased by individuals for home use. While all of this may be viewed as providing a significant increase in employee productivity, it is a double-edged sword because vast amounts of confidential company data can be copied onto a diskette with little or no chance of detection.

That information can be taken home either by an honest employee for work purposes or by a disgruntled employee for sale to a competitor. And, we usually find that the bigger the company, the bigger the problem.

Control is key

The key to solving the problem is to ensure that senior company management is aware of the size and scope of the problem as well as its potential security threats, such as disgruntled employees, mistakes, lawsuits and fire. The solution is clear: Management should be aware that the microcomputing resource, like any other company resource, must be controlled. And company resources — time, money and personnel — must be dedicated to finding this solution.

One approach used in many corporations to deal with the issue of microcomputer security is the development of an information center. The purpose of the information center is to make data readily available to users. Although this can be accomplished with appropriate training in a mainframe environment, the information center typically includes a mix of small mainframe and microcomputer technology.

> **"The solution is clear: Management should be aware that the microcomputing resource, like any other company resource, must be controlled."**

The information center provides an appropriate focus for user information processing. One of its primary responsibilities is to centralize the purchase of both microcomputer hardware and software. Standard policies, acquisition procedures and software/hardware support should also be provided.

This centralization process provides the coordination required to ensure that an organization does not end up with a lot of useless hardware and software that simply gathers dust in offices and on desks.

The information center should be an organization that will work closely with, yet independent from, the data processing function. Do not give the already overburdened manager of your major data processing center the added responsibility of the information center.

Information center personnel must also work closely with an information security organization to ensure that the center's policies and standards are consistent with the company security policies and procedures.

In addition, the information center must be user-friendly.

In order to establish standards, for example, the data processing manager's advice must be considered, but it should not necessarily be the final word. Why? Consider the following scenario. Company X's policy is that all microcomputers must be manufactured by the same company. (This is actually not an unreasonable policy, considering all of the different types of microcomputer operating systems, disk sizes and formats and applications software. Many data processing specialists recommend equipment consistency as a good starting point).

A few months or years later, a user group has a very specific application requirement for some software that only runs on another brand of microcomputer. But the company policy is that only one brand of micro is standard.

In this case, with the current evolution of micro technology, the policies of the information center should be flexible within certain limits. The purpose of microcomputing in the office is to improve productivity, not stifle it.

See SECURE SR/38

Adney is a senior consultant with Total Assets Protection, Inc., a management consulting firm specializing in computer security and disaster recovery, based in Arlington, Texas.

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Special Report

Simple security precautions ensure information safety

Many of the same security concepts that are available and implemented in the mainframe world also apply to the micro. The basic difference is the way that the security is implemented.

It is important to note that microcomputer security precautions do not need to be complex, in fact, the simpler the better. Simple and effective security requirements are more likely to be implemented. The information protection program for microcomputers contains the same elements — physical security, information security, and disaster recovery — as its big brothers in the mainframe world.

Physical security of the equipment must be ensured. If all of your micro users do not have offices that can be locked, a reasonable policy is to equip them with the appropriate anchoring hardware that will secure the microcomputer systems to their desktops.

If the equipment must also be portable, another alternative is to obtain a locked cabinet specifically designed to protect the equipment.

Information security is more difficult to deal with. Security software for the mainframe can control user identifications, passwords and access to data, but there is no equivalent for the micro. Although there is at least one add-on board for the IBM Personal Computer which provides hardware encryption for all data written to a disk, it is at best naive to believe that this is the solution to information security. Encryption boards can be easily obtained by anyone — an honest or a dishonest employee.

Simple is best

There are still a number of ways to implement effective information security. It can be as simple as a policy that requires that floppy disks be placed in a locked cabinet or desk every night. Hard disk systems are a little more difficult to protect, but simple is best. A key lock on the power supply for the system is an effective measure.

What about the problem of allowing employees to take computerized information home? In the case of micros, that may not be a good policy. But more important, there are legal and security problems associated with home use of computerized information.

Floppy disks may not only contain data; they may also contain the application software used for that data. More and more software manufacturers are bringing lawsuits against large companies for copyright infringements.

How do you control the data that is on these disks? One way is simply to prohibit employees from taking any floppy disks out of the office. This is not a very realistic policy to be sure, but it is one approach. Searching briefcases and purses is not enough — you might have to resort to a strip search to find a 3½-in. floppy disk. This is not the way to maintain a good relationship with employees.

It may be appropriate to have a policy of providing software to employees for home use, particularly when they are working on company business at home.

An effective way to offer this support is to allow the information center to make hardware and software available to employees at reduced cost.

SECURE from SR/36

One of the most important issues the information center must address is information security.

How do you approach this crucial issue? Most companies have established an information protection program that is the responsibility of an information security officer. Within the security context, this officer and the information center must work together to ensure that the required amount of security is available for the microcomputers.

Disaster recovery must also be considered for microcomputer systems. Documented disaster recovery procedures are probably more important for a micro than they are for a mainframe system. A single user mistake in a system command can erase hours, days or weeks of work. All data and software should be copied to backup disks and stored in an offsite location. Additional backups should be available at the work station. And don't forget the documentation itself, especially for user-written application programs.

The final key to the success of implementing microcomputer security is the enforcement of the standards, policies and procedures developed through the information protection program and the information center. In many large firms, it is not unusual to find that many managers have approval authority for purchases that is sufficient to buy a microcomputer system and software without the knowledge of the information center or any other organization.

It is imperative that policies providing strict penalties for the unauthorized purchase of computer resources be implemented and enforced. Since the information center will not have sufficient personnel to accomplish everything, the audit department can help provide the follow-up and reporting during routine audits.

Implementing effective microcomputer security is a complex problem. But it can be solved through management awareness of the problem, dedication of company resources to solving the problem and control of the microcomputer resource.

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Special Report

Identify costs, conduct thorough product evaluation

By Joanne Hulbig
Special to CW

The selection and acquisition of microcomputer software normally begin with two assumptions: first, that the purchase price of the package represents the total cost of the system and, second, that the selection process does not require the intense evaluation associated with mainframe package acquisitions. Both assumptions are wrong.

These assumptions lead to systems that at best do not meet the needs of the user or at worst do not work. The latter systems are the more costly because the software must be shelved and the entire selection process begun again.

> *Managers should consider hidden costs — such as those associated with conversion, training and maintenance — when they evaluate micro software packages.*

The key to avoiding these problems lies in identifying the costs involved to acquiring and implementing microcomputer software and to understanding the steps necessary to conduct a thorough evaluation.

Identifying costs

The purchase price of micro software is so low that total project cost is seldom examined closely. Often, hidden costs become visible only when a decision is made to abandon a particular package and start again. The need to identify these costs in advance is a strong recommendation for a careful selection process.

Conversion costs. One cost that is easily overlooked is that of conversion. Many projects involve replacing existing applications with new and better systems. To implement the new system, MIS managers and their selection teams must devise some means of transferring information.

Means of transferring data range from having users re-enter information to developing programs that will perform conversions and transfer data. Either method brings on significant costs, particularly if programming must be done on a contract basis.

Training costs. Another cost that managers seldom evaluate in advance is training, for which methods range from simply studying vendor documentation to completely relying on vendor-supplied courses.

Although the costs for vendor training at first seems higher, hindsight often reveals that the other option, the trial-and-error approach, exacts a heavy toll in terms of frustration and problems that may require significant effort to correct. Thorough and informative training, whether by the vendor or by in-house personnel, will save time and money over the life of the system.

Support costs. A final cost the manager must consider before acquiring a particular software package is support. Many vendors will support their systems for an annual fee, usually some percentage of the purchase price. This can be a great advantage, especially if the system must incorporate changes such as those in tax laws or in government-imposed reporting.

Managers and their acquisition teams, however, must give careful consideration to the contractual maintenance agreement. The purchaser's expectations usually exceed the vendor's obligations.

In the absence of a maintenance agreement, the manager must set up some means of in-house support. This may involve hiring a full-time programmer or using contract programmers as problems arise.

The hardware manufacturer or computer retailer that sold a firm its microcomputers can provide the names of individuals who are familiar with the system and perhaps with the software under consideration.

If managers consider hidden costs — such as those associated with conversion, training and maintenance — when they evaluate micro software packages, they will avoid problems that might otherwise arise after the purchases are made.

Conducting an evaluation

Although the total cost of microcomputer software is significantly less than that of mainframe software, the evaluation and selection processes should be as less thorough. According to H.L. Mencken, "For every problem, there is one solution [that] is simple, neat and wrong." When an organization does not understand its requirements, a software package may appear to be a simple and neat solution. It can also be wrong.

Huling is a systems analyst and project leader with Vulcan Materials Co., a Birmingham, Ala.-based chemicals and materials company.

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Special Report

before picking microcomputer software packages

Requirements study. The first step toward a successful package selection and acquisition is a requirements study. MIS managers' documentation of the needs of their businesses is essential to the selection of the right system for a particular application.

The most useful sources of information are the individuals who will use the system. Managers and members of their acquisition teams should conduct interviews with as many potential users as possible.

If the new system is to replace an existing one, interviewers should note both the problems and the benefits of the current system. During this stage, they should particularly aim to uncover the current system's assets; it is more difficult to determine what is right about a system than what is wrong.

Requirements checklist. After the team conducts user interviews, its members should document requirements in the form of a checklist, grouping them in three categories: "absolutely must have," "would like to have" and "interested if available." A checklist enables the manager to determine quickly whether a particular system meets the organization's needs.

Vendor selection. After the checklist is prepared, managers should obtain from their organizations' micro hardware manufacturers a list of vendors that supply software for the machines. Magazines, retail computer stores and computer organizations provide additional sources for this information.

The critical element is that the software must run on the hardware an organization has on hand. Managers and their acquisition teams should eliminate any software that is not already operating on that hardware. Software vendors may offer their packages at reduced prices, but the effort and frustration of being a test site will outweigh the savings.

Another aspect of this phase of software selection is evaluating vendor reliability. This is particularly important with microcomputer software; many vendors will not be in business six months from now when needs change and enhancements are required. A careful choice of vendors helps ensure that a package's quality will be maintained in the future.

If an organization obtains information from knowledgeable and reliable sources, it will reduce the risk of selecting the wrong vendor. Managers and their acquisition teams should select from the list of available software no more than five packages for evaluation. Any more than five will encumber the evaluation and delay the results. As one of the five is eliminated, another may be substituted.

Software selection. Managers and their acquisition teams should make use of as many means as possible (see story SR/42) for evaluating a particular micro software package against their organizations' requirements checklist.

After various software packages have been examined, only two areas of evaluation will remain: hardware limitations and cost.

Hardware limitations. To evaluate the new system's impact on an organization's hardware, the manager must estimate the space needed to store data, the memory needed to execute programs and the resources needed for capabilities that are not currently in use.

> ❞
>
> *The most useful sources of information are the individuals who will use the system. Systems acquisition teams should conduct interviews with as many potential users as possible.*

Costs. Managers and their acquisition teams should examine costs only after all other phases of the evaluation are complete. Only then will they know for what they are paying.

After each system has been evaluated as to its capabilities and costs, the manager can make comparisons and choose a software package.

Acquisition project managers should also consider two final points:

First, if a system does not fit the needs of an organization, the manager should resist the temptation to change the software and should, instead, look for changes that can be made in business procedures and administration to accommodate the package. Any modification to the system increases the difficulty of support and moves the firm away from the vendor's basic product.

Next, an organization should not make a purchase decision completely based on software capabilities but should give ample consideration to the vendor that will supply the product. A responsive and supportive vendor can overcome some system weaknesses and will, in the long run, make a micro software installation a success.

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Special Report

User contacts, other aids help shoppers pick software

There are three methods for obtaining the information necessary to compare microcomputer software packages to the requirements on an organization's checklist:

- Watching presentations and demonstrations.
- Contacting other users of a system.
- Reviewing a package's documentation.

Watching vendor presentations. Presentations are an excellent introduction to a system.

Major vendors are experts at marketing their products and will have a well-developed presentation prepared. Smaller vendors may be willing to demonstrate the system at a prospective customer's site or to send a demonstration package.

If an organization supplies a requirements checklist, the vendor will be able to address specific requirements and to direct its presentation toward those areas. Prospective buyers should bear in mind that caution is the key word at this stage — all systems look terrific in a presentation.

The organization's acquisition team should not accept a glossy, high-level presentation as being completely representative of a system but rather should ask specific questions and require the vendor to give detailed answers.

Contacting system users. The most reliable sources of information about a particular system are the individuals who use it, and the software acquisition team should contact as many users as possible, particularly those in the same industry.

Most vendors will furnish a complete listing of their clients, and prospective buyers should be wary of those that will not, especially those that insist on contacting their clients before the prospective buyer does.

These vendors may have made special arrangements to provide extra support or reduced prices to a group of users in exchange for recommendations.

Before an acquisition team speaks with other users, it should establish a set of direct questions about the operation of the system, the quality of the vendor and the usefulness of the documentation.

When the team actually contacts other users, it should note even casual references to problems. One user may have learned to live with problems that the prospective buyer would find unacceptable.

The acquisition project manager should ask the vendor to respond in writing to reported problems and should carefully evaluate the vendor's willingness to discuss and correct these problems.

The manner in which a vendor responds will indicate how it will respond when problems arise after a software package has been installed.

Reviewing documentation. Documentation is one of the most important and most overlooked areas of system evaluation. It is important because it serves as the primary source of information on using and understanding a system once it has been installed.

Prospective end users should review selected portions of a vendor's documentation and evaluate them for accuracy and readability. Documentation that cannot be understood cannot be used.

With microcomputer software, the rush to get a product on the market often results in little, if any, time for thorough documentation. A prospective buyer should not hesitate to point out problems to the vendor and to request that sections of the documentation be rewritten or clarified.

Documentation is a good yardstick for measuring a vendor's reliability. A vendor that has invested significant effort in the documentation of a system is likely to be a vendor that is concerned about ease of use and, in turn, about the user's satisfaction.

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*LAN Benchmark Report, May, 1985, Novell, Inc. and "Software, Not Hardware Key to LAN Performance," *PC Week* 1/15/85.

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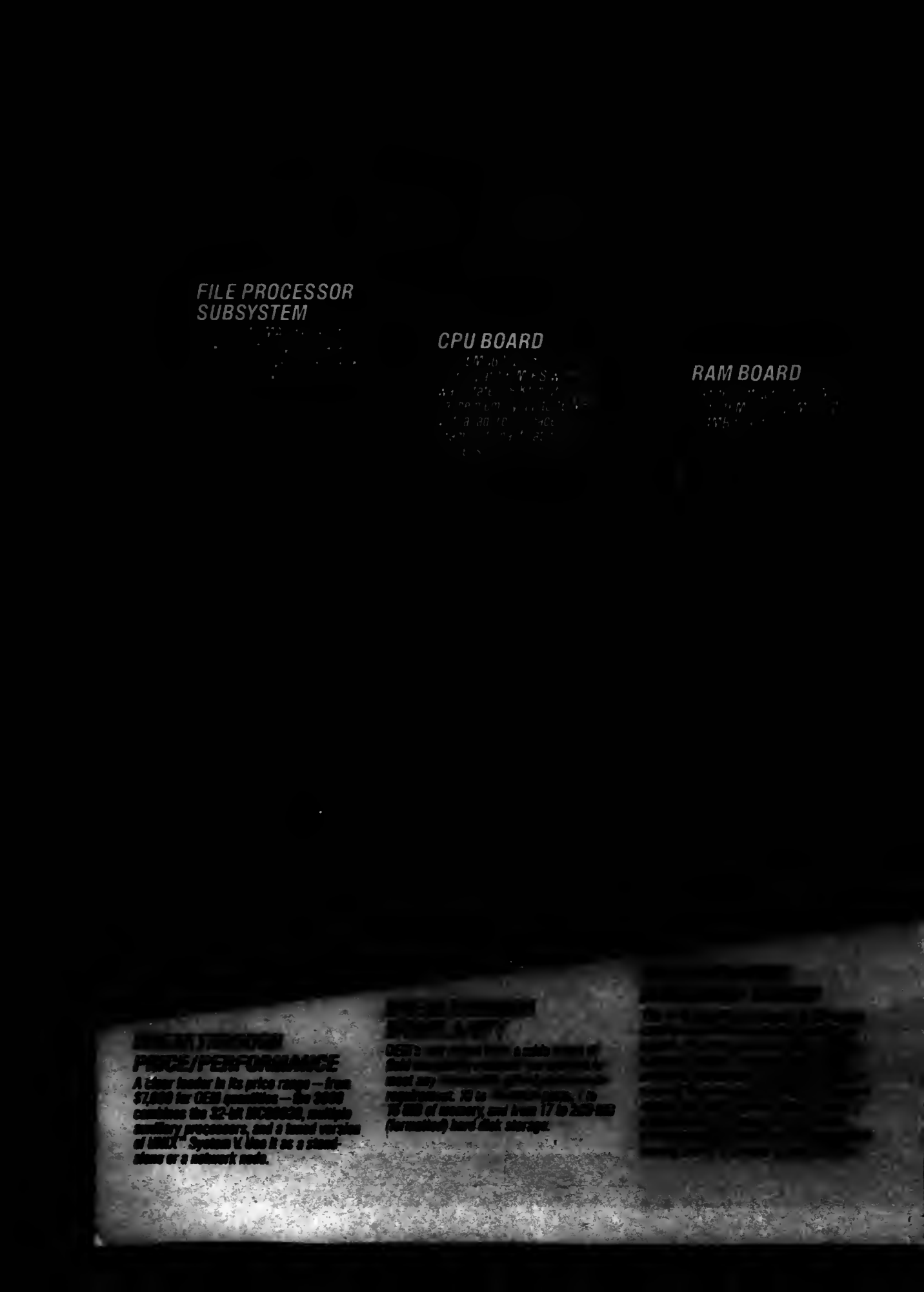

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Special Report

Aluminum parts firm finds time savers during stint

SMYRNA, Tenn. — A manufacturing firm here developed two time-saving applications in a CICS test environment while it served as a beta site for both a micro-mainframe communications software package and a mainframe program on which the link is based.

The user, Better Bilt Aluminum Products Co., ran beta tests with Cincom Systems, Inc. for the vendor's PC Contact micro-mainframe link and Mantis 4.0, a recent upgrade of Cincom's Mantis applications development software.

PC Contact works through Mantis 4.0 to give micro users access to on-line mainframe data.

Better Bilt, a subsidiary of Indal Ltd., manufactures a line of aluminum windows and doors. The firm began beta testing the two products last September, running the mainframe software on its 5M-byte IBM 4361 and a copy of the link on an IBM Personal Computer XT. The company's mainframe runs CICS and DOS/VSE under VM.

Better Bilt is the manufacturer of a line of aluminum doors and windows.

Glitches found

According to Jeff Borsini, Better Bilt's information center manager, the beta tests pointed out some glitches — most of which were problems with Mantis 4.0 that the vendor fixed with mainframe code patches — but proved in general that the link would meet the manufacturer's needs.

Borsini said PC Contact provided "a way of formatting and transferring mainframe data to a [personal computer], while being transparent to the user."

During the beta test, Better Bilt's MIS staff loaded some production data into a test CICS environment and programmed the link to perform two tasks.

In one application, the link software gave end users the ability to transfer information from intelligent time clocks through the Personal Computer XT to the mainframe. In the other application, the link provided console operators on the firm's 4361 with information about the status of an operation that ran on the XT.

Time clock data transfer. For this application, Better Bilt loaded a copy of its on-line payroll system into the test CICS environment. Borsini and his staff then programmed PC Contact to call Mantis programs that read data from a file on the Personal Computer XT and wrote it to an on-line mainframe file.

With the link in place, end users call a PC Contact menu option and the software invokes all the data transfer steps.

The system transfers data from between 600 and 700 time cards to the mainframe in about six minutes, according to Borsini. Without the micro-mainframe link, the task took between three and four hours.

Micro status report. For this application, Borsini used a feature of the link that allows users to play back a series of keystrokes programmed into the software. With the keystroke-saving feature, he programmed a series of messages that the Personal Computer XT sends to the mainframe console.

The messages tell the console operator the status of a

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COMPUTERS THAT FUNCTION
AND SYSTEMS THAT WORK.

Special Report

as test site for link package

daily electronic check reconciliation procedure that Better Bilt uses to transfer information between its headquarters and Pittsburgh's Mellon Bank. Every day at 7:20 a.m., the Personal Computer XT automatically dials into a mainframe at Mellon to transfer check reconciliation data.

If the line is busy or the mainframe is unable to accept data, the link software plays back a series of preset keystrokes that sends a message about the problem to the console operator. The messages tell the operator, for example, that the line was busy and the micro will try to dial again later or that the modem on the Personal Computer XT needs to be turned on before the data transfer can begin.

Borsini said the setup lets the firm run the check reconciliation procedure without keeping an operator at the Personal Computer to check for problems.

For the two applications, Borsini and his staff programmed the link software so that operations would be transparent to users. For the time clock data transfer, for example, information center staff members had to create command strings in PC Contact so the link would invoke Mantis read and write formats.

Better Bilt employees load aluminum strips for painting.

Users, however, see the application as a simple procedure: They call for one menu option, and the transfer from the micro to the mainframe takes place.

Once users invoke PC Contact, Borsini said, they just "sit and watch it go." Because the link software relies on Mantis to access data, programmers at Better Bilt have found it easy to use, he said. "If you know Mantis, there's very little to learn."

Borsini added, however, that he finds both Mantis and PC Contact too difficult for end users to program. For future applications, Better Bilt will follow the same procedure it did for the two test applications: Programmers will develop software and give users an easy interface to the system.

> ***"The idea is to eliminate the technical part so the [micro] user can deal in an environment that he understands."***
>
> — Jeff Borsini
> Better Bilt
> Aluminum Products Co.

"The idea," he said, "is to eliminate the technical part of accessing the mainframe so that the [micro] user can deal in an environment that he understands."

Better Bilt has just received its production version of Mantis 4.0 and plans to expand its PC Contact applications soon. With the beta test version of the software running in a CICS test environment, Borsini said, "We cannot get to any of our [live] data." The firm expects to initiate an executive inquiry system as its first micro-mainframe link application, he said.

Seven of the nine Personal Computer ATs and XTs the firm owns are fitted with terminal emulation boards, making them candidates for connection to mainframe via the link.

Cincom officially released Mantis 4.0 in January; PC Contact became available for users outside of test sites on April 19.

Special Report

Touch-screen input emerges from specialty markets,

By James Logan
and Dan Gackbein
Special to CW

Touch-screen input to microcomputers, which has gained some popularity in a number of vertical markets, is coming into more general use as a facet of video-based training programs in large corporations.

The technology has found comfortable niches in process control, where touch screens reduce the size and complexity of control panels; in point-of-sale settings, where they provide shoppers with a way to browse through video catalogs and shop via computer terminals; and in restaurants, where touch screens have already replaced membrane overlays on cash registers.

Now, in large corporations, the touch screen is being wedded to another technology, the interactive videodisk, to offer a new generation of training systems. Innovative managers are developing interactive videodisk-based courses to replace traditional centralized classroom instruction. These systems offer managers the ability to set up geographically dispersed learning centers where self-paced instruction is delivered via easy-to-use, interactive touch-screen monitors.

Interactive videodisk training systems are being employed in a wide range of settings. In the executive suite, they are training managers by modeling and acting out business situations that require critical decision-making skills. In hazardous shop environments, they are teaching workers safety procedures through video simulation. Auto manufacturers are using interactive videodisk systems throughout their dealership networks to deliver up-to-date training for mechanics and salesmen.

Touch screens are becoming a standard input feature in such videodisk-based training programs, and there are three reasons for this:

- They substantially reduce the time it takes users to learn to interact with the training system.
- They reduce or eliminate keyboard usage, thereby helping focus students' concentration on course content rather than on how to communicate with the system.
- They offer a more direct and intuitive way of interacting with visual information than keyboards do.

Controlled studies have been performed to test the efficacy of touch-screen videodisk systems. One study, done at the University of West Florida, pitted touch-screen videodisk training programs against manual ones in an effort to teach Florida Department of Health employees to administer a social program. Employees who received conventional instruction learned the task in 160 hours; those who used the video-based system learned in 120 hours, or in 25%

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Piecing together a training station

By James Gakbale
and James Logan
Special to CW

The basic building blocks of an interactive videodisk-based learning station are the microcomputer, the touch-screen monitor, the videodisk player and the software.

The micro. The main engine of the workstation is usually a general-purpose microcomputer. It may contain 64K to 2M bytes of memory, depending on the kinds of peripheral devices that will be attached to it and the system environment that will exist to support software development.

For practical reasons, these systems usually come packaged with disk storage subsystems that start at 10M bytes. At least one form of diskette drive for removable media is also standard. System support for displays, monitors, printers and I/O devices are usually packaged as options.

The touch-screen monitor. Touch-screen monitors generally use one of three technologies:

- Infrared.
- Resistive.
- Capacitive.

Vendors of all three currently offer similar pricing options.

The videodisk player. Optical storage technology has made the videodisk a practical storage medium for large amounts of visual and audio information. The disks come in a limited number of sizes and formats, as compatibility among disk players and disks is rarely a problem.

The predominant medium used in training applications is the 12-in. disk with a constant angular velocity format. A 12-in. disk has 54,000 concentric tracks (or frames) on each side, and each track can hold video information for one National Television Standard Code (NTSC) full screen image. At a normal playing speed of 30 frame/sec., this storage capability represents one-half hour of motion video per disk side.

Depending on the application, the disk side may consist entirely of

Gakbale is vice-president of software development at Telematic Systems, and Logan is president of Microtouch Systems, Inc.

Special Report

enters mainstream as aid for video-based training

less time than their coworkers.

The previous generation of computer training systems did little more than emulate manual environments: They substituted the process of striking the Return key for that of turning the page. The current generation of videodisk-based systems, however, offers an array of capabilities (audio, still frame, motion video and computer-generated graphics, for example) to the learning environment.

These capabilities allow the system to simulate realistically anything from sales situations to assembly line operations. Course designers can create varying levels of dynamic feedback through audio and video effects and can set up a training program that closely monitors student actions. If a training application is well designed, it allows students to control the pace, direction, depth and style of their instruction.

Microcomputer-based video learning stations allow training to be scheduled in a flexible manner with respect to time and geography. The result can be significant reductions in the costs associated with travel and with the time that employees spend away from the office.

In addition, videodisk training allows companies to get leverage from the expertise of their instructors. In many disciplines, the supply of qualified instructors has not kept pace with demand, and this is particularly true in technical fields. The ability to capture expertise on a videodisk and in software for distribution throughout a company can yield tangible savings for strained corporate training budgets.

Most large companies have several areas where touch-screen videodisk systems can be used for training. The most cost-effective applications will involve a repetitive task and will affect a large number of employees. In a manufacturing setting, such applications might be training programs for machine maintenance, process control or work assignments. In a service environment, video-based training might teach workers new procedures and methods or might explain personnel policies.

As corporations are faced with a competitive business climate in which rapidly changing technologies may make skills of the labor pool in certain industries obsolete, the need to retrain workers will be critical. By all indications, interactive videodisk training systems will play a major role in meeting this need.

Logan is president of Microtouch Systems, Inc. in Woburn, Mass., a firm that develops touch-screen technology. Schlieben is sales manager for Telematic Systems in Cambridge, Mass., which specializes in videodisk systems.

The building blocks of a touch-screen video training station.

motion-video sequences, a combination of motion-video and single-frame images or all single-frame images. Videodisks also support two channels of audio information the disk player can access independently.

The software. The microcomputer controls the videodisk player by sending software instructions. These instructions may start or stop the player, find a particular frame on the disk, display a frame or series of frames or manipulate either of the two audio channels.

Some advanced applications require the ability to overlay computer graphics and text on the video image. This capability is usually implemented as a board-level add-on to the microcomputer. The add-on boards accept input from the videodisk player (an NTSC television signal) and convert the signal to red-green-blue (RGB) components before sending it to the video monitor. This way, graphics and text are synchronized for output with RGB signals. Systems developers must have appropriate software to make use of this advanced capability.

The software development environment required to produce the control program for these systems is referred to as the authoring system or the language. It is usually hardware-dependent, and different packages offer varying levels of instructional features, touch-screen support, videodisk player support and graphics.

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Special Report

Info centers focusing on user experience, concerns,

By Naomi Karten
Special to CW

Conceptually, the information center's training function seems simple: Put users through a course or two in a package or two and set them loose to raise their productivity through the roof. Then sit back and be available to lend a hand when questions arise.

The reality, however, is that probably no facet of user support has information centers as overwhelmed as user training. The sheer number of people banging down the door for training exceeds the capacities of many companies.

In the DP world — so the complaint goes — there is never time to do it right but always time to do it over. In user training, however, there is no time to do it over. Yet because so many trained users subsequently need refresher training — and repeat refresher training in some cases — it seems appropriate to question the effectiveness of their first go-around.

One possibility is that training products and services are selected based on an assessment of their relative merits, to the near absence of attention to the needs and preferences of the users to be trained. But as training backlogs grow, recognition of individual differences in learning may become the key to the success of the micro support function.

Users are as different from each other as they are from DP. Certain users in certain business environments learn more effectively from one form of training than other users in other business environments in the same company.

Information centers are generally familiar with the gamut of training alternatives. Users are not. Simply put, users may not know much about computer training, but they know what they like.

Unswayed by vendor or trainer perceptions, these users have their own preferences. Some want and need to pace their own training; they function poorly in the midst of classroom-generated peer pressures and cannot sustain an attention level high enough to see them through two full days of training. Others take well to both the discipline and the camaraderie of the classroom and much prefer the personalized nature of human interactive training.

It is beneficial, therefore, to consider user concerns in terms of learning styles, business priorities and scheduling preferences and the possibility of offering a choice of training techniques. An analysis of training effectiveness in both large and small companies reveals five categories of issues that are useful in evaluating the effectiveness of alternative training methods relative to user needs. In each case, it is clear that some users benefit more with one type of training — whether computer based, classroom/workshop or one on one — than others.

■ **Variations in user mindset: the attitude issue.** Users are rapidly moving past the computerphobia stage. But some are still in the "Are you sure it won't bite?" category and need more hand-holding and sensitive, continuously available support than do the closet "techies." Alternatively, in companies that do not have a top-down approach to personal computer training, managers often prefer to lock themselves privately in their offices with their micro tutorials and learn away from the watchful eyes of computer-proficient subordinates.

■ **Level of user commitment: the motivation issue.** This has two meanings. One distinguishes between users

Karten, a former information center manager, is president of Karten Associates, a Randolph, Mass., consulting firm active in computer literacy training and the implementation of corporate personal computing.

Special Report

preferences can provide the most effective training

who have legitimate work-related reasons for learning personal computing and those for whom training provides a convenient opportunity for on-the-job career enhancement. (This is a valid distinction. Users are no different from programmers in occasionally looking forward to training as just such an opportunity.) A large financial investment in classroom training may be easier to cost-justify for personnel with immediate and documentable training needs.

The second meaning of commitment takes into account the priority nature of business life. Are users willing and able to make a commitment to complete a three-day, in-house class without work-related interruptions? Should classes be held off site so that users prone to interruptions and distractions would have a better chance of concentrating on the material at hand? Will self-paced, behind-closed-doors training improve the probability of completing a training program or will it add to the "I'll get to it later" syndrome?

■ Opportunities to put new skills to immediate use: the scheduling issue. Micro managers need to take a hard look at this one. Many users are concerned about the pressures and "learn it now or forever hold your peace" feeling imposed by an intensive, multiday class. Unless a user has a specific responsibility to implement what he has learned, some of the training material will not be absorbed. Much of the rest will be forgotten. Follow-up interviews a month or more after training often show that some then half the class participants had not yet used the skills that they had learned.

When training backlogs are long and growing, perhaps certain classes should be reserved for those with designated personal computing responsibilities, and other classes should concentrate on computer-based training. Or classroom training conducted a few hours twice a week rather than all at once may be worth seeking out.

> ***Users are rapidly moving past the computer-phobia stage. But some are still in the 'Are you sure it won't bite?' category.***

■ Customized vs. general training: the relevance issue. How important is it to address company-specific business needs? The popularity of off-the-shelf micro-based tutorials may suggest that users are willing to forego relevance in the learning process. Or it may indicate that the customization offered by some vendors or designed by in-house staff is available only at what is perceived to be too great a cost. Many users resist the packaged (Lotus Development Corp.'s 1-2-3) approach of some training vendors. Given the cost of lost learning, the expense of customized training can be worth the investment.

■ Training effectiveness: the quality issue. Training effectiveness is a function of the quality of the training. Classroom training that is not a blend of business, technical and teaching expertise may do users a disservice. Similarly, if a micro-based tutorial's explanations are more confusing than the problems they are intended to solve, the user would be better off to read a book.

Information centers that invest the time to solicit and examine user preferences and to plan two or three different training paths to personal computer competence may be rewarded with a greater level of user satisfaction and skill and — who knows — maybe even a reduced rate of return!

Special Report

File server, micro software merge to give investment

BOSTON — When end users at an investment firm here initiated a search for a micro-mainframe link, the MIS department joined in to ensure that the link was consistent with the firm's mainframe environment and that it provided for controlled access to data.

Users at Fidelity Investments Co. wanted a way to use mainframe data on their microcomputers in conjunction with software packages like Lotus Development Corp.'s 1-2-3.

"[They] were using powerful data, but in many cases they had to rekey it from a batch report back into a [personal computer], which can take several hours a day," said Frank Diasparra, vice-president of the firm's systems engineering group. "They'd say, 'You could get a lot more out of me if I could simply get the information I need from the main computer.' "

> *The firm wanted to use a central file server to give its various machines access to data from all other machines.*

The firm had about 350 microcomputers — IBM Personal Computers, Personal Computer XTs and compatible machines — and maintained its data on four IBM mainframes: two 32M-byte 3083 Model JXs, a 12M-byte 3033 and a 16M-byte 4381. The two 3083 JXs maintained production data bases under MVS/XA. Subsets of the production data resided on the 3033 under VM/SP, and the 4381 under VM, where they were available for user access. About 1,800 dumb terminals tapped into the data on the VM machines.

Diasparra said pulling together the various parts of a sprawling system was a goal his company shared with other firms. "Many, many organizations have the same problem. They need the ability to get data to and from the various parts of their computing environment," Diasparra said.

Fidelity, however, wanted more than a link between machines. When the firm began its search for a micro-mainframe link, it had a number of criteria for the product. The link would have to provide the following:

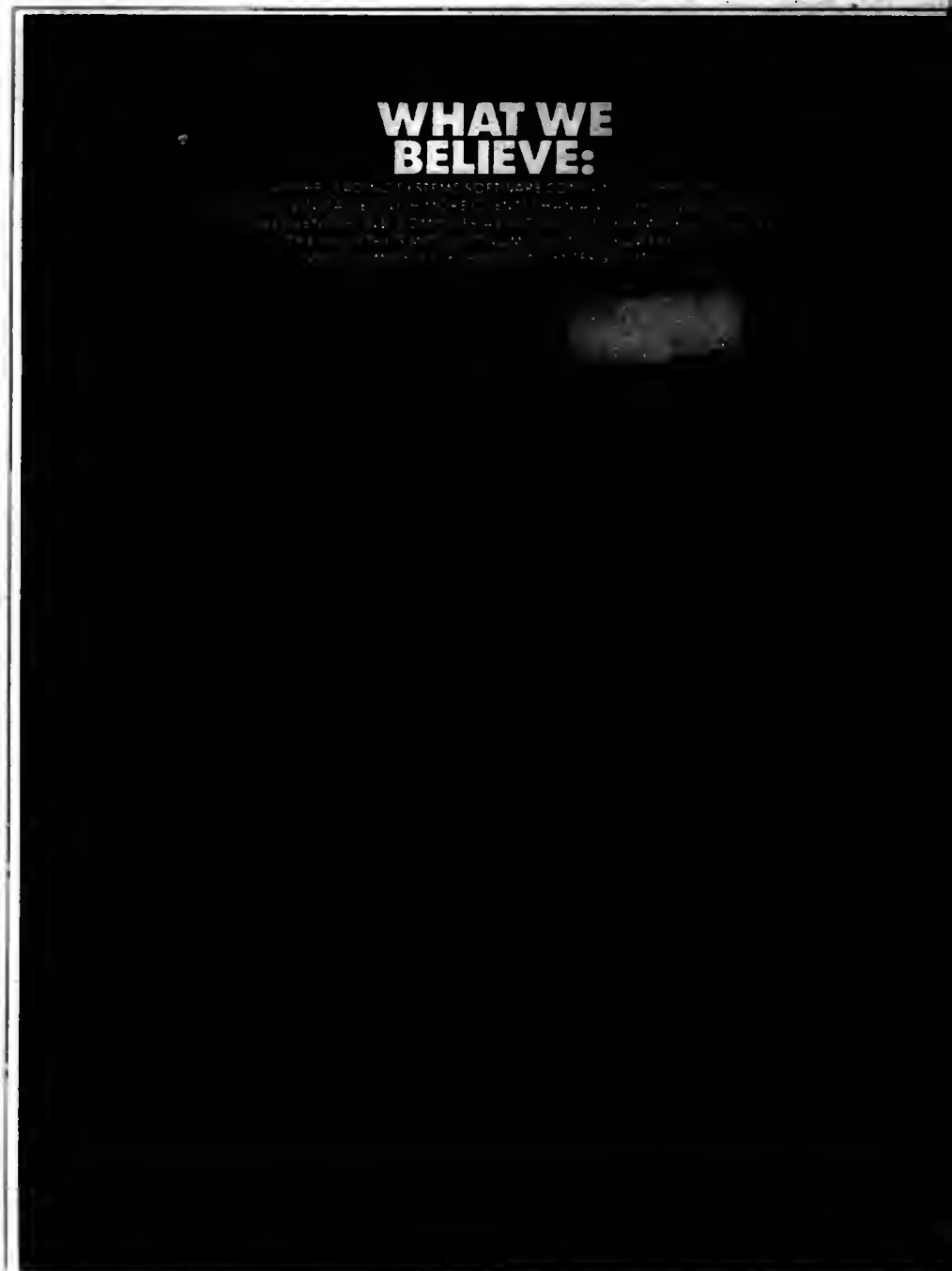
■ **Generic communications abilities.** Fidelity's users had recommended some links that tied particular mainframe software packages to particular micro products. "Every one had merit," Diasparra said, "but they were too specific. They were add-ons to somebody else's product line that tied the user to a particular data extraction capability on the host side, a certain set of tools on the [personal computer] side or a particular communications protocol."

Fidelity wanted generic capabilities so it could link new products as the firm acquired them.

■ **Peer-to-peer linkage.** Diasparra said Fidelity wanted to use a central file server to give its various machines access to data from all other machines, with each appearing to any other as the same kind of machine.

The firm also wanted to translate data from one format to another rather than merely to transfer it among machines, according to Alex Niehaus, a technical adviser in the systems group. "We wanted the ability to move from [VM to a personal computer environment] and translate the data to [personal computer] products such as Lotus' 1-2-3," he said.

■ **Data integrity and security.** Fidelity maintained a VM environment on its mainframes because VM offered strong control over users' access to information and allowed for automatic data backup. Diasparra said the firm wanted a link that was consistent with these features and that would not in-



Special Report

firm universal access

validate them.

Last fall, the firm purchased Linkware Corp.'s Linkware:Information Server, a product that combines a VM/CMS-resident file server application with corresponding personal computer software. It installed the mainframe software on both of its VM machines and gave about 25 personal computer users copies of the micro software.

The personal computers are linked with the mainframes via coaxial cable. Each micro has a terminal emulation board that allows it to appear to the mainframe as a 3270-type machine. Diasparra's group maintains control over access to mainframe data through the file server's user identification scheme, which allows MIS to allow or deny access to individuals or to classes of system users.

To obtain data from the mainframe, a user types a Linkware command on his personal computer; the software produces a menu displaying options. The user then looks through directories of mainframe libraries he has access to and instructs the software to translate data he wants into a format his micro software can use, such as Data Interchange Format and Lotus' Print format. He then downloads the data to his micro and manipulates it.

Diasparra said Linkware supports VM access methods and that this, in conjunction with the microcomputer file formats the product supports, gives Fidelity Investments the generic capabilities it needs. "With Linkware, we go to the data source, log on, see the data we are authorized for [and] download the data into the [personal computer] transformed into an executable format," Diasparra said. "The situation is completely favorable for uploading data."

When the user is finished, he can store updated files in one of two mainframe libraries — a personal library only he has access to or a central library, from which other authorized users can access the data. When a file is stored on the mainframe, it is automatically saved by VM's backup facilities.

User profile

Most of Fidelity Investment's 25 current users of the micro-mainframe link are financial analysts, secretaries and managers. They manipulate mainframe data on their personal computers with Lotus' 1-2-3 and Symphony, Ashton-Tate's Dbase III, Microrim, Inc.'s Rbase and other micro software packages.

The financial staff members analyze stock market trends, customer information and financial data; the secretaries do budgeting, list-tracking and shareholder tracking; managers use their personal computers for decision support. Staff members in the firm's controllers office also use the micro-mainframe link for a variety of tasks.

Diasparra said that in the future, about one-half of Fidelity Investment's microcomputers will be tied in to the VM mainframes, and all these machines will use Linkware. The other half will serve as stand-alone machines.

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Special Report

Good user-MIS relations spur successful acquisitions

By Joseph J. Adamsky and Mary V. Campbell
Special to CW

After years of computer use, large corporations have established procedures and planning cycles for developing and managing automation. Microcomputer acquisition, however, has circumvented these controls.

Users bypass the coordinated support that is available from their information systems departments. Their reasons for avoiding involvement with MIS vary. Some say past experience has convinced them that DP would seek total control over their procedures; others like the idea of determining their own expenditures and scheduling their own applications development.

Regardless of the reason, users who set out on their own encounter problems. They find, for example, that they have failed to arrange appropriate maintenance contracts or that they cannot train themselves to use their equipment properly.

Such problems diminish the benefits of the microcomputer, and many corporate users never realize the potential that this tool offers for their businesses.

MIS departments in many corporations have exacerbated the problems by avoiding involvement in microcomputer acquisition and support. Whatever the reasons for MIS' inaction — the feeling that micros are merely toys, the lack of time and other resources to back micro acquisition, the power struggles between DP and user departments — the result is that users have been forced to proceed completely without support.

> *Corporations that stress partnership between users and MIS will both minimize problems and maximize the benefits of microcomputers.*

In some companies, MIS has established control of acquisitions without providing any further support for users. This partial solution almost ensures failure. A total solution, on the other hand, involves both acquisition control and user support.

A planned partnership approach between user departments and MIS can bring about such a solution. This approach requires that neither party be dominant. Rather, in order to develop a strategy that best serves the corporate interest, each side provides expertise in its areas of strength: MIS offers its technical knowledge and experience; users outline their business needs, requirements and experience.

Such an approach requires the support and involvement of upper management. Upper management involvement does not ensure success, but its absence may result in failure.

Any firm that decides to take a partnership approach to microcomputer acquisition and support should first develop a plan of action. The plan will delineate roles so that the acquisition team can utilize different participants' expertise to achieve optimal benefits in a cost-efficient manner that is consistent with corporate goals.

The plan should include the following steps:

■ **Organize a committee.** The committee should include user and MIS representatives. To be truly effective, it should have clearly stated responsibilities for purchase review, standards, common package approval, security and the like. The committee should be vested with appropriate authority to support these responsibilities. The membership should include representatives of both user and MIS interests, but the committee should be kept to a small size.

■ **Appoint a coordinator.** Ideally, the coordinator of the joint effort should be from a user department.

■ **Consider a pilot effort.** Before a firm makes a major purchase of hardware and software, it can run a pilot program in one selected user department. This pilot will validate the exact configuration of hardware and software packages that will be required. It will also help the acquisition group develop security, procedural and processing specifications.

■ **Identify high potentials.** The acquisition group should identify users who have the motivation and interest to enhance the chances of a successful first effort. It should also point out applications that do not have a great number of interrelationships with other systems.

■ **Bring in outside experts.** "Outside," in this case, means experts who have no connections to vendors. A firm should hire such consultants to conduct seminars or short training programs.

■ **Centralize purchasing.** Centralized purchasing provides both leverage and quantity discounts for hardware, software, maintenance and service.

■ **Buy the software.** A firm should purchase software first, then buy the hardware that supports it.

■ **Establish policy and controls.** In order to minimize potential problems and maximize benefits, a firm must establish security and purchase controls and develop microcomputing policies. Controls should not, however, constrain users and MIS staff members.

■ **Determine training needs.** A wide variety of training methods will be needed initially and on an ongoing basis. Options include formal group sessions, tutorials, individual instruction and books and manuals. Some will require outside assistance; experienced MIS or user staff members can conduct others.

With a plan in place that addresses these points, a firm can move toward microcomputer acquisition and support. Corporations that stress partnership between users and MIS will both minimize the problems that develop when user departments proceed alone and maximize the benefits of microcomputers.

Adamsky is an associate professor of computer science at Grand Valley State College in Allendale, Mich., and a principal at Creative Computer Solutions, a consulting firm in Grand Rapids, Mich. Campbell is president of Micro Solutions, a consulting firm based in Baltimore.

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Special Report

Low-cost multiuser systems may usurp role of local nets

By Charles Grant
Special to CW

IBM's recent introduction of the Personal Computer AT has generated attention for both multiuser systems and stand-alone micros connected by local-area networks. No doubt, customers who had not considered multiuser systems will be asking about them. And while few vendors welcome head-to-head competition with IBM, there are examples of well-engineered, value-added products successfully competing with Big Blue.

Besides the attention that comes with IBM's "validation" of the multiuser approach, IBM's introduction of a local-area network with an operating system that supports record locking means major software vendors will be more willing to develop true multiuser applications.

Multiuser systems usually support fewer workstations than local-area networks; 12 is a typical upper limit. Systems of this size support smaller businesses and the departmental organization of larger businesses within which communication primarily occurs.

> ***Multiuser systems will replace stand-alone personal computers as the OA unit.***

This suggests a scenario for future cooperation between the two approaches. Multiuser systems, with their resemblance to the departmental organization of businesses, will replace stand-alone personal computers as the office automation unit. Local-area networks and stand-alone personal computers will play an important role in providing company-wide and interdepartmental communications.

There are two main types of multiuser systems — time-shared and multiprocessor. The multiprocessor approach more closely parallels the local-area network because each workstation has a dedicated processor.

Workstations in a multiuser system usually consist of a keyboard and a VDT cabled to a CPU. Each workstation has a dedicated processor plugged into the system bus located in the CPU. The microprocessors communicate with the system's dedicated file server and each other via the bus, rather than cabling, which is why multiuser systems are also referred to as closely coupled networks.

Both local-area networks and multiuser systems address the need for microcomputers that support the sharing of information and equipment. Cost and performance differences result from the fact that local-area nets attempt to extend multiuser capabilities to microcomputers intended for stand-alone use, while these capabilities are designed into multiuser systems.

The multiuser system's architecture delivers significant cost and performance advantages. Because multiuser workstations do not require individual power supplies and supporting hardware for each workstation, these systems are usually much less expensive than local-area networks. Networking circuit boards, the personal computer housing and, in some networks, a translator unit all add to the cost of the local-area network.

The use of dedicated processors for workstations enables multiuser systems to deliver processing power equivalent to that of a local-area net. But since the multiuser system is closely coupled, system communication is inherently faster than in a local-area network.

Single vendor may ease problems

A single vendor usually supplies and services the entire multiuser system. Because this vendor has designed the system, problems will probably be easier to diagnose and repair.

A local-area network, on the other hand, becomes a network of vendors as well as of personal computers. Local nets are usually installed after a business has purchased a few personal computers, and it is not unusual for the personal computers to come from different vendors. It is unusual for the networking hardware manufacturer to have also manufactured the personal computers. Installation and service means dealing with different vendors. And because no single vendor designed the entire system, network maintenance is more difficult.

Local-area nets will continue to appeal to businesses that have made a significant investment in personal computers and now recognize a need for multiuser capabilities. But as customers recognize the price, performance and service advantages designed into multiuser systems, these systems will become an attractive alternative to local-area networking.

Grant is president of North Star Computers, Inc., a San Leandro, Calif.-based manufacturer of multiuser microcomputers.

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Special Report

Presentation graphics meets firm's need for flexibility

NEW YORK — Two and a half years ago, managers at a financial services firm here acquired access to analytical graphics output from micro spreadsheet packages. They liked it at first, but soon clamored for better quality.

"You get spoiled very quickly," said Brad Burnett, coordinator of an on-line portfolio analysis service at Shaw Data Services, Inc. "As we became more and more spoiled, we wanted to have increased flexibility with our graphics."

Specifically, the managers wanted presentation-quality graphics they could use as communication tools in-house and at client meetings. Shaw Data provides its clients, more than 200 money managers and banks, with access to and analysis of financial information.

The firm found spreadsheet graphics too limited for use in presentations because they provided few labeling options or chart formats, Burnett said. Shaw Data's managers wanted the ability to insert explanatory notes and comments anywhere on their charts and to choose appropriate formats for different types of information. They also wanted software that would allow them to output graphics to paper, transparencies or 35mm slides.

In the summer of 1983, the firm investigated six micro graphics software packages, bought copies of three of them for in-house testing and decided to purchase Graphwriter from Graphic Communications, Inc. Shaw Data installed its first copy of the software in the fall of 1983 and is currently running two copies, each on an IBM Personal Computer XT.

> ***The firm found spreadsheet graphics too limited for use in presentations.***

Top managers from various departments within the firm design charts and graphs using paper worksheets provided with the software. They pass the worksheets on to secretaries and low-level managers, who sit down at the Personal Computers with the graphics software.

The worksheets include all the questions the software will ask of the computer operator, such as which format, what kind of labeling and what type of output the final graph should have.

When a manager completes the sheet, his work is done. "I can hand that piece of paper to a secretary and have a graph back in 15 minutes," Burnett said. Using the worksheets to plan charts helps Shaw Data make effective use of its expensive microcomputers, he added.

The software itself is menu-driven and provides 23 different chart and graph formats. Burnett said the variety allows Shaw Data's employees to choose appropriate graphics for the topics they want to present.

The firm's client services staff, for example, produces pie charts that break down inquiries the staff receives from clients into categories such as performance, pricing and accounting. With the pie charts, the staff can see what type of information customers request most often and can prepare itself to answer their questions.

Burnett uses a combination bar/line chart to plot Shaw Data's hardware and software expenses over time. The bars on the chart show how expenses increase and decrease from month to month. The lines, which connect the tops of the bars, show general trends.

Shaw Data's accounting department makes bar charts, line graphs and combination graphics that track payables and receivables, and its personnel department uses various formats to show employee concentration and growth. "Almost everyone in our organization now has access to graphics," Burnett said.

Besides providing the in-house applications, the software helps the firm deal with suppliers and customers. Shaw Data gives many of its customers access to financial information over dedicated long-distance telephone lines.

As such, AT&T is one of its prime suppliers. With the graphics software, employees plot line downtime; they use the graphs they produce to negotiate service agreements with AT&T, according to Burnett.

A set of monthly graphs that Shaw Data's systems group creates shows how long customers must wait to receive information over phone lines. These graphs depict average response times for different geographical areas. With them, Burnett said, "we can plan equipment purchases and system enhancements to better meet the ever-increasing needs of our clients."

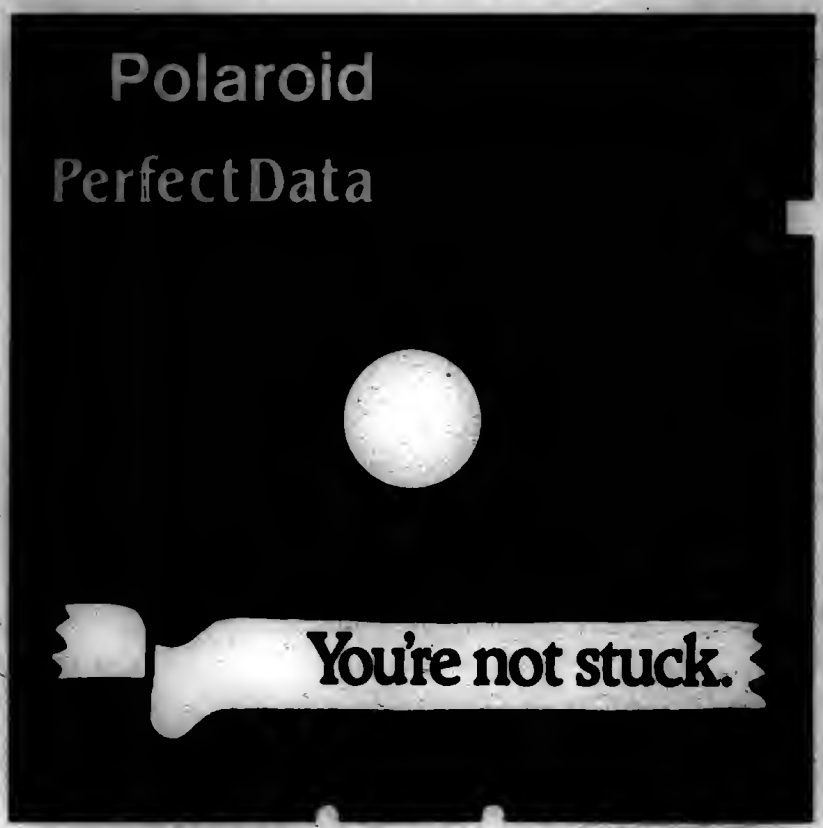
If a customer calls to report a delay, for example, Shaw Data's employees check the customer's reported response time against the average for his area. A response time that varies significantly from the average may signify a problem phone line and prompt a line upgrade.

For transparencies and slides

The firm also uses the graphics software to produce transparencies on two Hewlett-Packard Co. plotters, one 7470A two-pen and one 7475A six-pen plotter, and to make 35mm slides on a Polaroid Palette system. The slides and transparencies supplement presentations that Shaw Data makes to individual clients and to its annual client seminars — regional meetings that attract between 150 and 200 people.

With the software and the plotters, each transparency costs approximately $1 and each slide about 35 cents to produce. The firm previously relied on a graphics artist to make slides and paid him $20 for each one. "We are overwhelmed by the difference in price," Burnett said. He added that turnaround times for presentation graphics have also improved.

The software has some built-in warnings to steer users away from poor chart design. If a user attempts to use a format that is inappropriate for the data he wants to display (for example, if he tries to draw a line graph rather than a pie chart to show segment information), the software denies the user's request. "You don't even get an option to try it," Burnett said.



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Special Report

OVERHAUL from 89/30

labor rate. Managers predict how many hours they will need for each task, and their predictions are fed into the system. After users approve completed tasks, the tasks' completion dates are entered, and the system calculates achieved labor rates.

Project managers are judged by how well they meet their predictions: If the managers plan to devote 40 hours to a task, they receive 40 hours worth of credit for the completed task, regardless of how many hours their staff members actually devoted to the job.

Strowbridge said that the setup requires managers both to execute tasks efficiently and to plan them well. If they plan for a 40-hour task and consume 60 hours (a 66% achieved labor rate), 20 hours worth of work goes without credit; if they complete a 40-hour task in 20 hours (a 200% achieved labor rate), they exhibit bad planning skills.

The software system generates monthly achieved labor reports, which go to top managers in the MIS department. Strowbridge said he uses these reports to show the firm's corporate executives how well his department has met its productivity goals.

He said achieved labor reporting is new to MIS managers but familiar territory for other executives. "They live in that world," he said, and MIS benefits from working in the same environment.

Strowbridge uses other reports generated by Micromen to apprise top management of backlogs, staffing needs, budgets and other MIS status indicators. He also justifies user charge-backs based on information the system produces.

"These reports enable me to really give our senior management a handle on what [MIS] is doing for the company," he said. "They're a great communication tool for us because they make our work immediately clear and comprehensible."

The reports are tailored by frequency and by level of detail to different groups of managers. Top managers in the MIS department receive monthly reports that are summaries of overall activity. Project managers, on the other hand, get weekly detail reports of their tasks.

According to Strowbridge, the weekly reporting procedure helps managers stay on top of their projects. "It tells you if you're in trouble, and you can take corrective action immediately," he said.

Special Report

DP professionals rank high as critical system resource

Micro equipment, training, integration mean nothing without effective control

By John A. Devolites
Special to CW

Not all corporations have had good fortune acquiring microcomputers. Some corporations seem to be following such ludicrous guidelines as the following:

■ Local-area networks are in — they are stylish and only require a coaxial cable.

■ Forget about compatibility — sooner or later everything will be integrated.

■ Buy cheap software — after all, expensive software really does not work that much better.

■ Take advantage of bankruptcy actions — although a microcomputer manufacturer may have fallen on hard times, it is a golden opportunity to pick up machines at unbelievable savings.

■ Anyone can program — programmers use Cobol, but Basic is just as good.

Such questionable advice runs rampant these days because just about everyone — from the organization's vice-president for public affairs to the purchasing director — fancies himself an expert on microcomputers.

Unfortunately, many corporations have overlooked an important resource in their rush to automate — the DP professional. As a result, they have confused the capabilities of personal computers, mainframes, word processors and other equipment; underestimated the need for training; and overestimated current integration capabilities, among other mistakes.

It is a sad state of affairs — one that could be prevented by establishing effective control over microcomputers.

Where the responsibility for this control resides within an organization is important, but it is not as important as the basic need for such control. To solve these problems will require a consistent, practical approach to information management within such corporation. That is how control is defined.

It can be achieved in large part by following a more intelligent set of guidelines than those mentioned above. The three most important are the following:

> ***Many corporations have confused the capabilities of personal computers, mainframes, word processors and other equipment; underestimated the need for training; and overestimated current integration capabilities.***

■ Standardization. — Most large corporations decide on a specific vendor before their first major microcomputer acquisition is made. Others, however, acquire a potpourri of microcomputers. Standardization reduces the overhead costs of acquiring, maintaining and developing microcomputer systems.

The level of standardization should include the amount of memory, type of disk drives, software packages, communications, printers and displays. Keep in mind that many microcomputer distributors offer trial evaluation periods for computers, software and peripherals.

■ Vendors. — The selection of a vendor to provide microcomputer systems really boils down to the initial and ongoing investment the corporation plans to make in the technology.

Some companies have standardized on certain microcomputer configurations with third-party add-on boards and peripherals. The cost savings of this approach are substantial, but long-term integration and maintenance can be issues.

Overall system maintenance should also be considered. Some companies negotiate a fixed price per system; other companies have elected to use a time-and-materials approach when it comes to systems maintenance.

■ Planning. The investments major corporations have made in micro technology dictate the need for formal planning. These questions should be answered before microcomputers are purchased:

■ Are they needed?

■ Who is going to use them?

■ What are they going to be used for?

■ Who will be responsible for them?

■ What types of hardware and software should be bought?

■ Will this hardware and software work with other systems?

■ Who will be responsible for training and what will it entail?

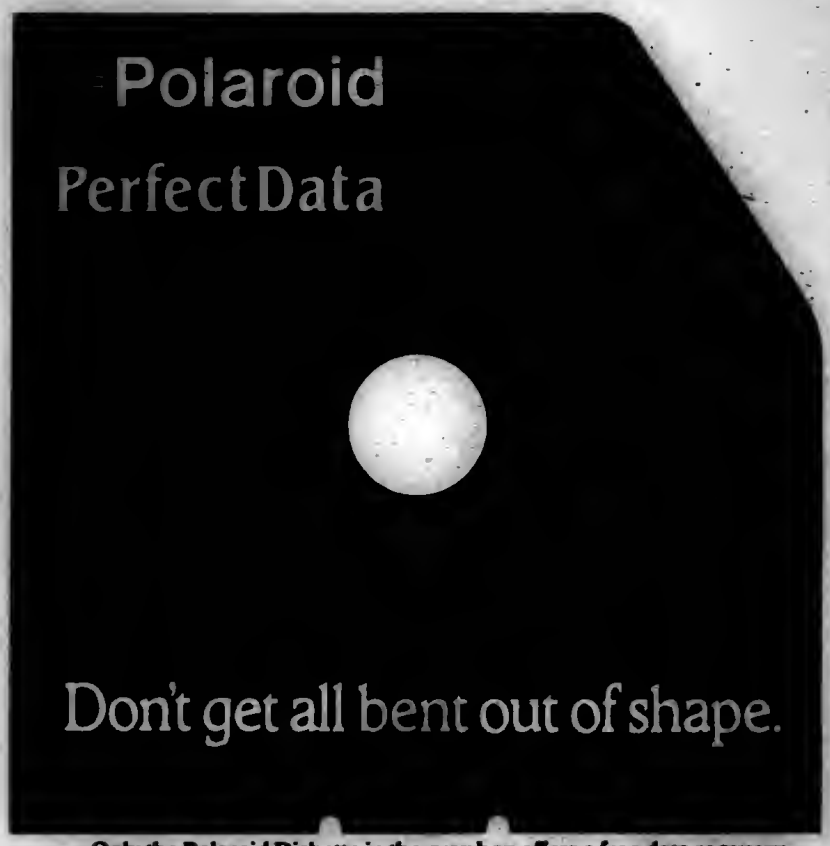
■ How will the microcomputers be used three years from now?

Providing answers to these questions may seem difficult, but it is a requirement in today's large corporations where there is a tremendous temptation to write a purchase order and buy without forethought. The low cost of micros in combination with decentralized buying authority can create havoc.

Integrated planning may initially delay the acquisition, but over the life span of the technology it will substantially reduce frustration and costs.

Some corporations assemble a team of in-house experts. Others may rely on external resources when planning for integrated microcomputer acquisition.

Devolites is DP director for the government divisions of Booz-Allen & Hamilton. He is responsible for directing the departments of Computer Operations and System Administration, Configuration Management, Software Development and Special Projects.



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Special Report

Programmers will hold out for practical workstation

By Jim Dickie
Special to CW‡

While administrative users have willingly embraced the microcomputer, programmers have typically shied away from it, choosing instead to continue using IBM 3270-type terminals attached to mainframes.

They have had no justification for purchasing micros; their work entails developing applications to run on large mainframes, and there has been a lack of micro software capable of helping them with this sophisticated task.

Programmers have no aversion to microcomputers. Their reaction to the idea of micro workstations is generally positive. They find the interactivity, detailed graphics capability, user interface and other features that microcomputers offer very attractive. They respond positively to the idea of moving development and testing activities to microcomputers.

When vendors offer practical micro workstation systems, those that justify the use of personal computers rather than mainframe terminals, programmers and other power users will be glad to use them. Micro workstations will increase programmers' productivity by removing the constraints of mainframe response time and will also offset mainframe processing burdens.

The microcomputer programmer workstation market presents software vendors with a major growth opportunity. It offers them the chance to venture outside the saturated markets for word processing, spreadsheet and graphics software and to move into an untapped area with more than one million potential users.

Hardware manufacturers have started to design machines — the IBM Personal Computer XT/370, for example — that support the concept of programmer workstations. Mainframe software vendors have started to transport workable subsystems of their programs to microcomputers.

The real goal, however, is not to make the microcomputer a subset of the mainframe but to take a totally new approach to applications development, an approach that takes advantage of the capabilities of the microcomputer. This approach must, however, take into consideration what happens to programs once they are sent to the mainframe.

In order to design software to support the workstation concept, vendors will have to consider three sets of requirements: one for the micro, one for communications and one for the mainframe.

Micro software requirements

The architecture of the system that runs on the micro workstation should be a true fourth-generation language. It need not help programmers code Cobol or assembler but should help them solve business problems. It should have all of the attributes of a mainframe fourth-generation tool — a nonprocedural language and intelligent use of defaults, for example — and should allow users to get results in one-tenth of the time they would need with lower level languages.

The language itself should also relieve users from worrying about the environment under which the applications will run. Whether the program being developed is meant to run as an on-line or batch program on the mainframe, or as a stand-alone application on the microcomputer, the use of the system should remain constant.

The system should do all of this while taking advantage of the benefits that micros offer. It should, for example, allow for applications flowcharting with microcomputer graphics. It should

Dickie is director of product marketing and support for the MIS division at Informatics General Corp.'s Canoga Park, Calif., office. Informatics General markets mainframe programming tools.

Special Report

development before they jump on micro bandwagon

have field-level facilities and a menu-driven option to help first-time users. The system should be totally self-contained so that programmers can work independently of mainframe outages or line problems.

The most significant capabilities a micro workstation can offer are interactive prototyping and development and off-line testing. These features would allow programmers to involve users in an evolutionary approach to applications development, one in which the prototype expands in detail until it becomes a working system.

Communications requirements

The microcomputer workstation should also be rich in micro-mainframe link capabilities. However, vendors who offer systems that merely provide an easy means of uploading and downloading programs for development and maintenance will not provide enough value.

In addition to these capabilities, a link should allow for the selective extraction of data from mainframe data bases to facilitate the prototyping and testing process. It should also offer the ability to share information among a number of programmers. Links for microcomputer programmer workstations should be able to meet the same hardware requirements that traditional links do: They should support asynchronous, bisynchronous and Synchronous Data Link Control via a variety of add-on boards and protocol converters. The lack of communications standards makes this flexibility crucial.

Host software requirements

The mainframe host should address four functional areas: security, resource utilization, environmental intelligence and data base management system (DBMS) transparency.

■ Security. Because they will provide the ability to do development and testing off-line, microcomputer programmer workstation systems should include user profile arrangements at the host. The systems should be able to identify individual users by either passwords or serial number checks and to determine what types of operations specific users can perform. They should be able, for example, to track the applications that each programmer has developed and is allowed to maintain. The systems should also control file access and determine whether a specific user can report, update or browse in a given file.

■ Resource utilization. The code generated on the microcomputers should be able to run efficiently on the mainframe. There should be no reason to give up cycles in exchange for boosts in productivity. In the case of on-line programs, the mainframe system should be a compiler that generates source code modules. It should have the intelligence to analyze the task at hand and generate appropriate calls (in contrast to using a fixed-call strategy for all applications). In order to serve reporting applications, the host software should include a processing priority scheme and should provide for the automatic batching of tasks that access the same data.

■ Environmental intelligence. This feature should remove the need for programmers to understand the operating system under which different applications will run. The mainframe system should analyze the operating system and automatically generate its specific parameters. It should also generate appropriate teleprocessing code for applications that will run on-line.

■ DBMS transparency. The system should provide independence in regard to the files that programs must access. Based on what the program is designed to do, the mainframe software should generate all the calls that are necessary to access data from flat files, hierarchical files, relational data bases or a combination of any of these.

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Special Report

Information age demands adjusted management skills

By William Godbout
Special to CW

The real value of microcomputers in the workplace is in the amplification of individual human effort and human skills — raising the individual's productivity by improving his creativity. Increased productivity is vital to bringing about the reindustrialization of the U.S. and its conversion from a smokestack society to an information society.

One of the ways to speed this conversion to an information society is to develop a matrix of management skills within which to employ microcomputers, workstations, mainframes, communications, networks and all other rapidly developing electronic tools available.

The result may be the redefinition of information management. And the time is right for bringing this new management matrix to bear on microcomputers in the office.

The first key point in applying management skills to microcomputers in the workplace is realizing that these capable machines are every man's tool, not just the wards of the DP department. If a manager starts developing another cult of high priests around micros from a user's standpoint — the true application standpoint — the effort will fail.

Those "everyman computers" now exist and they are getting better, faster and more capable every day. The improvement of work output through tools such as scientist/engineer workstations, dedicated administrative workstations, computer-aided design, graphics and manufacturing computers and many other desktop applications is now evident, even at this early stage of microcomputing in the workplace.

Managers must also realize what the single microcomputer or even groups of stand-alone or networked micros cannot do.

But first, managers must recognize what they must do. Microcomputers in the corporate environment should have the following capabilities:

■ **Administrative reporting.** In the management of any project, administration and reporting are key requirements. General-purpose micros running word processing software meet those requirements very nicely.

■ **Modeling.** Whether it is accomplished through physical or mathematical models or computer simulation, modeling is a microcomputer requirement. At certain levels of modeling requirements, general-purpose micros, using spreadsheet software and capable of making rapid "what-if" manipulations, are satisfactory.

■ **Communications.** Another key requirement for microcomputers is that of communication, either with other micros or the mainframe.

The major problem in those three key areas — is that no manager today can pull a general-purpose microcomputer off the shelf, drop it on a desk and say, "This will do your word processing, modeling, number crunching and handle all your communications." That machine does not yet exist and may never exist, though it is a machine that all manufacturers are trying to build.

What is more likely to happen is a general case, solution that will involve microcomputers and workstations and that will satisfy about 80% of all engineering, administrative, scientific and business applications at the individual's desk and under his total and local control.

But the other 20% will be met by the capabilities of highly specialized machines, with rigorously optimized hardware and software that makes them ideal for highly specialized control tasks, guidance tasks and data base management tasks. However, these machines are basically unsuitable for general computing.

Management skill enters in after that 80th percentile. The best manager must be able to answer the question, "Can the job be done with a single off-the-shelf microcomputer, or will we need additional special and dedicated hardware and software?"

Summing up these two key points in the managerial question, the person charged with deciding to install microcomputers must first be able to answer the question: "Can we use electronic equipment as an amplifier of individual human effort in this application?" If the answer is yes, he then can ask whether or not a single, off-the-shelf micro can fill his needs.

Managers charged with bringing micros into the workplace have a great opportunity in the next two years to do it right. There is enough experience with micros to avoid time-consuming mistakes, there is enough solid direction from industry leaders to make very good estimates of where the future lies and there is enough actual experience already in the workplace to provide a history of what works and what doesn't.

Managers must now superimpose their own styles of management expertise on that growing body of hardware knowledge.

Godbout, chairman and CEO for Vizayn Corp. (formerly Compupro Systems, Inc.) established Compupro as a manufacturer and supplier of microcomputer systems and components. Compupro changed its name to Vizayn this year.

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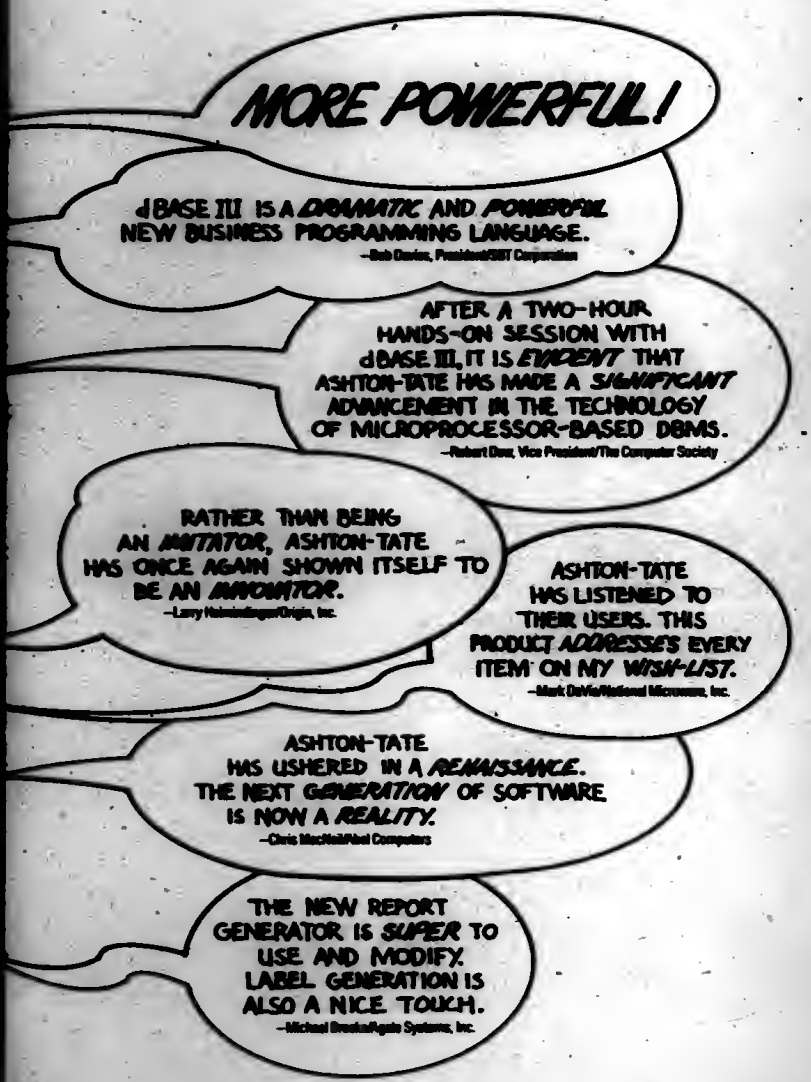
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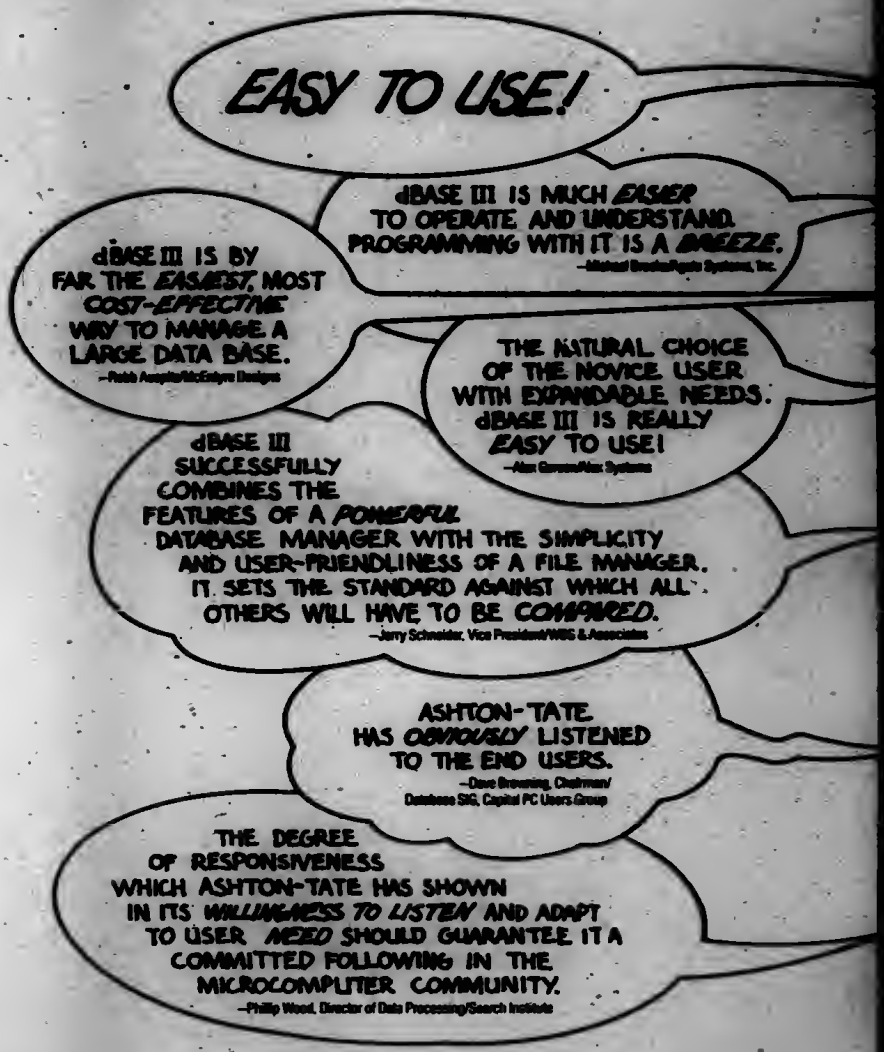
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Special Report

Emulator offers insurer premium access to software

APPLETON, Wis. — A link between AT&T Unix-based micros and an OS/MVS mainframe has provided an insurance firm here with a low-cost solution to a high-priority problem.

Homeco Life Insurance Co., a small affiliate of the Home Mutual group of life insurance companies, began in 1983 to offer its clients interest-sensitive insurance policies. These policies, which feature fluctuating interest rates, changing values and variable premium schedules, required more sophisticated record-keeping systems than the firm had on hand, according to Ed Patschke, Homeco's vice-president.

The firm had installed an office automation system for word processing and other tasks, but it did not have software sophisticated enough to support the interest-sensitive policies. "We had to get a system up quickly," Patschke said.

Homeco investigated software packages that could run on its AT&T Unix-based system — four Fortune Systems Corp. 32:16 micros that each supported four CRT terminals — but found them too expensive. Software that could process the life insurance policies carried license fees of about $250,000 and maintenance and installation costs that would have brought Homeco's investment to $300,000, Patschke said. "We knew we couldn't afford that."

Instead, Homeco decided to use a time-sharing service bureau to process its interest-sensitive claims. Homeco's managers signed a contract with TPA Systems, Inc. of Kansas City, Mo., a service bureau that ran policy-processing software under MVS/OS on a 32M-byte Amdahl Corp. 580 Model 5860 mainframe. Patschke said that TPA offered Homeco some significant benefits, including low cost — processing fees of $25 a policy — a proven track record and the ability to bring the system up quickly.

The service bureau's mainframe could also capture information from the policy transactions on magnetic tapes that could later be run through a 4M-byte Honeywell, Inc. DPS 8/44 mainframe in Home Mutual's headquarters. Homeco maintained its billing and accounting records on the Honeywell machine.

Incompatibility between Homeco's micros and the service bureau's mainframe posed a problem, however: Patschke though he would have to invest $7,000 in an IBM Personal Computer that his employees would use only for tying into a time-sharing service.

Before he bought a Personal Computer, Patschke attended a computer show where he saw a demonstration of a hardware/software terminal emulator that allowed Fortune micros to appear to MVS mainframes as IBM 3270-type terminals. He purchased the emulator, SST, Inc.'s Handshake II, and brought it up on one of Homeco's micros. The emulation hardware and software and the installation of both cost Homeco about half the price of the IBM micro, he said. In addition, the emulator allowed the firm to make use of its existing equipment.

Policy data

When Homeco's agents sell interest-sensitive policies, they mail an application form to the firm's headquarters. Employees key in data about the policy on a Fortune CRT terminal. The microcomputer that runs the terminal connects with the service bureau over a dedicated line, and the CRT operates as a remote on-line terminal to the service bureau's mainframe. When employees at Homeco key in policy information, it immediately enters a mainframe data base.

The service bureau's mainframe processes the data and creates an extract tape that TPA mails to Home Mutual for entry to the DPS 8/44. Employees at Homeco's headquarters can also request status reports from the service bureau mainframe. These are transferred on-line to the Fortune micro in Homeco's office and passed on to a Genicom Corp. printer that outputs hard-copy reports.

Patschke said the firm has been feeding its existing policy records to the service bureau and using the bureau's mainframe to maintain them but has not yet begun to issue new policies using the system. Next month, Homeco will start to use the system to record and process policies as its agents sell them.

Time savings

With the service bureau's software replacing the manual methods Homeco had been using to handle its interest-sensitive claims, the firm expects significant time savings, Patschke said. "There is no question that the software ... is going to streamline the processing."

In the future, Homeco plans to use its Fortune equipment and electronic mail software to set up a system through which it can exchange information with vendors who support its business.

Patschke said the company hopes, for example, to use electronic mail to receive blood test results and other information from outside laboratories. Homeco uses such data to help determine rates for insurance policies.

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MICROCOMPUTERS

Conferencing tool for IBM micros out

MENLO PARK, Calif. — An interactive teleconferencing package and a text/graphics electronic mail program have been introduced for the IBM Personal Computer line by Professional and Corporate Communication Systems, Inc.

CC:share, a real-time conferencing program, reportedly enables geographically separated users to run applications programs jointly over dial-up lines. Each user can see what the other is doing as it occurs on the screen, and they can pass control of the keyboard back and forth.

Potential applications include time-critical communications, presentations, remote software maintenance and software training, the vender said.

CC:share reportedly supports two-way teleconferencing, alternate voice/data communications for one-way teleconferencing, file transfers and "snapshots."

At any time during the work session, the snapshot feature can capture a screen, compress it and store it as a PC-DOS file, the company said.

The CC:mail electronic mail package reportedly permits users to capture screens from an application and include them in a mail message or to attach application files to the message. The package also features a word processor, graphics drawing functions and a highlighter.

CC:share and CC:mail run on an IBM Personal Computer, Personal Computer XT and AT and compatibles with PC-DOS or MS-DOS 2.0 or higher. A Hayes Microcomputer Products, Inc. or compatible modem is required. CC:share requires an additional 26K bytes of memory space to run an individual application program. CC:mail needs 320K bytes of random-access memory.

In 10-unit purchases, CC:share costs $195 per copy and CC:mail, $295 per copy.

Professional and Corporate Communication Systems is headquartered at Suite 160, 535 Middlefield Road, Menlo Park, Calif. 94025.

■ Tecmar's storage unit for IBM Personal Computers combines a 20M-byte hard disk drive with a 60M-byte tape backup system/48

■ IBM announced an entry-level version of its 5531 Industrial Computer/48

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SMALL TALK
Eric Bender
Cliff Dwelling Editor

Computerphones: What do you get?

At Compaq Computer Corp.'s flashy launch of its Telecompaq last month, company executives kept insisting that the new desktop is not a computerphone — a statement that mystified everyone because the Telecompaq meets every common definition of a computerphone.

The message Compaq tried to convey was that smooth integration of telephone and personal computer functions would create a new and highly flexible type of machine. "It's hard to get that point across," Compaq President Rod Canion acknowledged.

Despite all its marketing smarts, Compaq faces a tough struggle with its triple-threat, triple-disk-drive machine. Among the hidden dangers is the requirement to sell, through telecommunications channels, a product that DP organizations

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Quickmac for 1-2-3 debuts

ELMWOOD PARK, N.J. — Fox & Geller, Inc. has introduced Quickmac, a software package that adds programming capabilities to Lotus Development Corp.'s 1-2-3.

Many 1-2-3 users are developing substantial programs with 1-2-3's built-in macro facility despite the limited tools available within that facility, Fox & Geller President Jeffrey Fox noted. These 1-2-3 diehards "can use Quickmac to create applications using a high-level language," he said.

With the new package, users running 1-2-3 reportedly will be able to type in familiar programming statements such as DO WHILE or IF THEN/ELSE. Quickmac then will generate complete programs, using 1-2-3's macro tools.

The programming language employed is similar to that used in Ashton-Tate's Dbase III, the company said.

Quickmac is said to include a full-featured screen editor, a syntax checker and a

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R Systems unveils OA packages

DALLAS — Three office automation software packages for multiuser systems under AT&T Unix, Microsoft Corp.'s Xenix and Ryan-McFarland, Inc.'s Cobol Operating System have been introduced by R Systems, Inc.

The packages are also available in versions for single or networked systems under Microsoft's MS-DOS. File compatibility is offered between versions, R Systems said.

The new packages include an integrated office automation package, a word processor and a desktop manager.

The OA package, R Office, reportedly features word processing and desktop management functions along with data base management, spreadsheet and report-generating capabilities. Data can be shifted between applications in the package.

R Office's word processing functions are said to include document editing, formatting, printing and report generation. Six editing modes are available, as are unlimited formatting options and several built-in print options, including a quick-print feature to print out whatever is on

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IBM SQL/DS and DB2 relational DBMS now on PC

ORACLE, the relational DBMS compatible with IBM's SQL/DS and DB2, is now available on the IBM PC/XT and PC/AT. While SQL/DS and DB2 run only on IBM mainframes, ORACLE runs on IBM mainframes as well as on DEC, DG, HP and most other minis and micros. Any application written for SQL/DS or DB2 will run without modification on the complete range of systems supporting ORACLE, including PCs.

SQL/DS and DB2 are relational database management systems; ORACLE is a relational DBMS plus an integrated set of 4th generation software tools for application generation, report writing, color graphics and network communications.

Oracle Corporation introduced the first relational DBMS in 1979. Now, ORACLE provides the only complete implementation of the IBM-standard SQL language available for the PC.

Oracle Corporation cites three principal application areas for its product's capabilities:

■ The ORACLE Application Development Center provides a PC-based development center for the creation of DB2 and SQL/DS applications. The flexibility of the personal computing environment is made available to programmers creating applications for use with IBM's relational database products.

■ The ORACLE Personal Information Center extends the Information Center concept to the Personal Computer. ORACLE's application generator, graphics, spreadsheet and other end-user tools provide a SQL/DS and DB2 compatible Information Center on the desktop.

Users can become acquainted with the facilities and power of the Information Center in the personal computing environment, and transfer their knowledge and skills as the MIS Information Center facility evolves. The ORACLE Personal Information Center provides the facilities for MIS to develop the cooperative relationship with end users so vital to the success of the Information Center.

In addition, with ORACLE on departmental superminis, users can create identical Information Centers at the department level.

■ The ORACLE Distributed Information Center provides an intelligent set of communication links among multiple systems, with ORACLE running on IBM mainframes and various minis and PCs.

Using ORACLE's SQL*LINK networking facility, ORACLE on such diverse systems as MVS, VM/CMS, VAX/VMS, UNIX and PC/DOS can selectively exchange database information using the full capabilities of the SQL language. Applications, portable across all environments, can be run identically on any system, and data can be intelligently extracted for use at any site.

ORACLE is currently installed on over 1000 supermini and mainframe systems around the world, as well as on thousands of PCs and compatibles. Oracle's customers include 8 out of the 10 largest U.S. corporations, as well as major foreign companies and many government agencies.

For further information, contact Oracle Corp., Dept. C, 2710 Sand Hill Rd., Menlo Park, CA 94025, or call 415/854-7350 ext. 2043.

IBM unveils entry-level 5531 model

BOCA RATON, Fla. — IBM has released an entry-level model of its 5531 Industrial Computer and an industrial graphics display for factory floor operation. Both units are said to offer extended operation under conditions including high temperature, humidity, vibration and shock, power-line transients and particulate filtering. The IBM 5531 Model 011 OEM Industrial Computer — based on the Intel Corp. 8088 microprocessor — functions as an interface to plant equipment, worker-reporting terminals or supervisory workstations.

Standard features include a keyboard, 256K bytes of memory, one dual-sided diskette drive, a diskette adapter and a combination adapter. The combination adapter offers a programmable asynchronous communications port, a parallel interface port for printer attachment, a battery-backed clock and a thermal sensor interface.

The 5531 Model 011 costs approximately $3,725, depending on the dealer, and will be available in the second quarter of 1985.

The 7534 Industrial Graphics Display can be attached to the IBM Industrial Computer using either an IBM Enhanced Graphics Adapter, which costs $524, or the IBM Color/Graphics Monitor Adapter, which costs $244. When combined with the IBM Enhanced Graphics Adapter, it provides 640- by 350-pixel definition and can use four of 64 colors at a time.

The 7534 display — available in the third quarter of 1985 — will cost approximately $1,175, depending on the dealer, without either adapter board.

More information is available from IBM Manufacturing Systems Products, P. O. Box 1328, Boca Raton, Fla. 33432.

Tecmar offers drive/tape unit

SOLON, Ohio — Tecmar, Inc. has announced a combination hard disk drive and tape backup unit for the IBM Personal Computer, Personal Computer XT and AT. The QIC-60W20 is said to provide 60M bytes of tape backup and a 20M-byte Winchester hard disk drive.

The product reportedly contains a three-head tape deck and provides immediate read-after-write verification of data. A built-in power sensor is said to sense power reductions in the micro to protect the heads from writing on data during power interruption.

The system is said to provide menu-driven commands to lead the user through backup operations, including the restoration of lost information on a hard disk.

The QIC-60W20 costs $3,495.

Tecmar is headquartered at 6225 Cochran Road, Solon, Ohio 44139.

IBM System 9003 for manufacturing out

RYE BROOK, N.Y. — IBM has introduced a version of its System 9000 microcomputer for use in manufacturing and process control applications. The 9003 industrial computer reportedly can operate in a stand-alone environment or link with a host under IBM's Systems Network Architecture.

Based on the Motorola, Inc. 68000 processor, the 9003 reportedly can control up to 64 tasks concurrently and support up to 5M bytes of memory and up to 40M bytes of on-line storage.

It uses the CSOS operating system embedded in read-only memory. Microsoft Corp.'s Xenix multiuser operating system is offered as an option. Also optional are Basic, C, Fortran 77 and Pascal languages and software to support windowing.

The 9003's 66-in.-high cabinet includes a closed-loop air-conditioner, reportedly enabling the unit to operate at room temperatures of up to 125 degrees F. A battery-operated backup power source is optional.

Both a pressure-sensitive keypad and a typewriter-style keyboard are included. According to a vendor spokesman, the keypad's 57 keys can be programmed to perform several operations, reducing the need for operator interventions.

Five expansion slots available

Five expansion slots are available on the 9000's chassis, and memory is said to be expandable to up to 1M byte for each feature board inserted. Optional disk storage includes the choice of 5¼- or 8-in. diskette drives or a 5¼-in. built-in hard disk.

The 9003 will be available this quarter and costs $21,130 in its basic configuration of 128K bytes of memory and one 5¼-in., 640K-byte diskette drive or one 8-in., 985K-byte diskette drive.

For more information on this system contact IBM's Information Systems Group which is located at 900 King St., Rye Brook, N.Y. 10573.

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SOFTWARE

■ Micro-Software Developers, Inc., has announced the C Debugger for creating C programs with the Lattice, Inc. C compiler on the IBM Personal Computer.

The C Debugger is said to support all four Lattice memory models and to recognize automatically the type being used. It produces a high-level view of C programs and a low-level view of machine addresses and instructions for testing assembler language functions.

The product allows the C source for the program being debugged to be executed one line at a time or in multiple lines, according to the vendor.

The C Debugger requires 256K bytes of main memory and IBM's PC-DOS Version 2.0 or higher.

The package is priced at $195 plus $3.50 for shipping and handling.

Micro-Software Developers, 2146 W. Main St., St. Charles, Ill. 60174.

■ Syscomp has announced DB III Export, program conversion software that translates worksheet files from Lotus Development Corp.'s 1-2-3 or Symphony to Ashton-Tate Dbase III data base files.

The product runs on the IBM Personal Computer, Personal Computer XT or AT running IBM's PC-DOS Version 2.0 or higher.

DB III Export reportedly can create a new data base file from specified spreadsheet data or append worksheet data to an existing data base file. Data base size is said to be limited only by disk size.

The product costs $75 and is available bundled with Syscomp's DB III Import for $125.

Syscomp, Suite 210, 6935 Aero Drive, San Diego, Calif. 92123.

■ Powerbase Systems, Inc. has released an enhanced version of its Power-Base data base management system for IBM microcomputers.

Release 2.1 of Power-Base is said to be compatible with IBM's Topview software and provide a data transfer link to and from Lotus Development Corp.'s Symphony.

Other features include foreign language support, password protection and improved performance response time.

Version 2.1 of Power-Base requires 320K bytes of memory and does not support DOS 1.0/1.1.

The product costs $595.

Powerbase Systems, 12 W. 37th St., New York, N.Y. 10018.

■ Thoughtware, Inc. has introduced Skill Skill Skill software for sales training and analysis using the IBM Personal Computer and compatibles.

The software consists of two components. The training portion reportedly evaluates sales attitudes and skills and guides the sales representative through selling exercises. The applications portion permits the user to monitor, plan, execute and analyze the sales process.

The software's training component costs $495 and requires a color graphics card. The applications component costs $195 and requires dual diskette drives.

Thoughtware, Suite 1000A, 5959 S. Sapphire Drive, Coconut Grove, Fla. 33133.

■ Parameter Driven Software, Inc. has introduced PDS-Alert PC, a programming system for IBM Personal Computers.

PDS-Alert PC reportedly is a fourth-generation programming system that requires no programming experience for use. Under the software, the Personal Computer's screen displays questions and choices, leading the operator through programming step by step.

The process is said to be self-documenting. Effects of changes are shown on the screen immediately.

PDS-Alert PC requires a Personal Computer or compatible with a 5M-byte or larger hard-disk unit and at least 512K bytes of memory.

It costs $795.

Parameter Driven Software, Suite 2620, 300000 Telegraph Road, Birmingham, Mich. 48010.

■ International Electronic Machinery, Inc. (IEMI) has announced Plot 77 software for the Hewlett-Packard Co. Series 200 desktop computer. Plot 77 is said to construct, scale and calibrate the axes of a graph for any array of coordinate data.

The product is installed under HP Pascal and stored in Motorola, Inc. 68000 native code. It is said to be compatible with most HP HPIB and RS-232 plotting devices and with most raster graphics printers. Plot 77 reportedly supports HP Series 200 color monitors and various color plotters and can be called from IEM Fortran 77.

Plot 77 contains a library of 14 plotting subroutines, according to the vendor. It is reportedly available on 3½-, 5¼- or 8-in. disks.

Plot 77 costs $395.

IEM, P.O. Box 1689, Fort Collins, Colo. 80522.

■ RTCS Corp. has released an enhanced version of PC/RTX, its operating system that implements the Intel Corp. iRMX86 Release 6 operating system configured for the IBM Personal Computer and Personal Computer XT.

PC/RTX Version 4.1 is said to offer faster floppy-disk operation and to support the IBM Enhanced Graphics Adapter and special-function keys on the IBM keyboard. The product reportedly includes PC-DOS and PC/RTX configuration utilities for

Continued on page 60

DENCE

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TELEX COMPUTER PRODUCTS, INC.

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the Personal Computer XT hard disk, utilities to transfer files between PC/BTX and PC-DOS disk formats and six Intel utilities.

PC/BTX Version 4.1 requires 512K bytes of memory and two 360K-byte disk drives or a 360K-byte drive and the Personal Computer XT hard disk. The product is available for $995.

RTCS, 1360 Flynn Road, Camarillo, Calif. 93010.

■ Wallsoft Systems, Inc. has announced Dflow software that reportedly allows users of Ashton-Tate's Dbase II and Dbase III to debug programs by locating control statement errors.

Dflow is said to illustrate program loops, IF/ELSE conditionals and case constructs. The package produces correctly indented program listings for individual files and applications systems.

Dflow runs on any Microsoft Corp. MS-DOS or IBM PC-DOS operating system running Dbase II or Dbase III, such as the IBM Personal Computer, Personal Computer XT or AT. The product costs $129.

Wallsoft Systems, Suite 869, 233 Broadway, New York, N.Y. 10279.

SYSTEMS

■ Micro Five Corp. has unwrapped two new members of its 16-bit Series 1000 multiuser computer family.

Both feature a 1M-byte diskette drive, 256K bytes to 768K bytes of main memory, from four to 20 I/O ports and a 60M-byte high-speed streaming tape system for backup.

The Turbo 1000 model T-1700 is said to feature 72M bytes of hard disk storage, and the Turbo 1000 model T-1800 is said to feature 140M bytes of hard disk storage.

Software systems for the models include Science Management Corp.'s Business Basic operating system or Micro Five's Stardos operating system.

The T-1700 costs $17,995 and the T-1800 costs $22,495.

Micro Five, P. O. Box 5011, 3560 Hyland Ave., Costa Mesa, Calif. 92626.

COMMUNICATIONS

■ Comark, Inc. has introduced Twinax PC Board for terminal emulation on IBM Personal Computers running under IBM's PC-DOS 2.0 and up.

The board reportedly provides emulation of local IBM 5291, 5292 and Model 11 terminals and allows any Personal Computer-compatible printer, with the capability to output graphics or compress printing, to emulate IBM's 5256, 5224 and 5225 dot matrix printers.

The package costs $895.

Comark, 135 N. Brandon Drive, Glendale Heights, Ill. 60139.

■ Pathway Design, Inc. has announced the enhancement of its Pcpath communications software for IBM Personal Computers in the IBM Systems Network Architecture/Synchronous Data Link Control networking environment.

Pcpath Release 2.2 now offers a command shell that accommodates high-level interfacing for local applications. Using Pcpath, a Personal Computer application written in a high-level language gains direct access to Pcpath's communications services.

Pcpath's command shell manages the interfacing of local applications to the lower programmatic interfaces built into the emulation software. Pcpath costs $295.

Pathway Design, 177 Worcester St., Wellesley, Mass. 02181.

■ Dpac, Inc. has introduced MAC/3000, software that reportedly allows the Apple Computer, Inc. Macintosh to emulate a Hewlett-Packard Co. 2624A smart terminal.

All major functions of the HP 2624A terminal are said to be supported. Also included are upward and downward file transfers, local editing using any Macintosh word processing or text editing package and printing with the Apple Imagewriter and Laserwriter printers.

The emulation software also reportedly supports both conversational and block modes.

MAC/3000 costs $160.

Dpac, Suite One, 240 Pamela Drive, Mountain View, Calif. 94040.

■ Integrated Network Systems, Inc. has introduced its SDLC Loop PC Adapter for the IBM Personal Computer line.

The adapter reportedly enables documents, data or programs to be distributed for processing throughout the IBM 8100 network. It offers single-key switching between a Personal Computer session and either of two IBM 3278/3279 emulation sessions.

According to the vendor, through the use of a menu-driven configuration program, the adapter also reportedly permits a Personal Computer to be more easily integrated in the 8100 network.

The adapter costs $1,275.

Integrated Network Systems, P.O. Box 91393, Mobile, Ala. 36691.

■ Software Synergy, Inc. has announced Respond/TTY communications software that is said to link IBM's Personal Computer, Portable Personal Computer, Personal Computer AT or XT to minis and other micros by emulating a teletypewriter terminal.

MICROCOMPUTERS

Data transfer features reportedly include the Xmodem protocol for error checking to ensure accurate data transmission and capture. The software is said to transfer both text and binary data, allow users to run other programs simultaneously and download or channel data into spreadsheets, word processing or data base files.

Respond/TTY requires 256K bytes of memory, IBM's PC-DOS version 2.0 or higher, one double-sided diskette drive, a monochrome or 80-col. color monitor, an AT&T-compatible internal or external modem and an asynchronous I/O board with appropriate cabling.

The product is priced at $125.

Software Synergy, 466 Main St., New Rochelle, N.Y. 10801.

■ Phoenix Computer Products Corp. has announced Ptel, binary file transfer software for microcomputers running the Microsoft Corp. MS-DOS operating system versions 2.0 and higher.

Ptel users reportedly can transfer binary and Ascii files to other users in a network, upload and download files from electronic bulletin boards and move files between different operating systems and machines. Ptel operates in VT102 terminal emulation mode and utilizes Phoenix's Telink binary protocol to change block size during data transmission, according to the vendor.

The product reportedly handles transmission speeds of up to 9.6K bit/sec. and can operate in originate and answer mode. It requires 96K bytes of memory and runs on the IBM Personal Computer, Personal Computer XT and AT, Digital Equipment Corp. Rainbow and other MS-DOS machines.

Ptel sells for $195.

Phoenix Computer Products, Suite 220, 1416 Providence Highway, Norwood, Mass. 02062.

■ Telexpress, Inc. has introduced a version of its Teleterm X communications package for the Tandy Corp. 16/6000 personal computer under Microsoft Corp.'s Xenix multiuser operating system.

Teleterm X reportedly supports a variety of modem types and allows users to define their own modem type. It is compatible with any system running Teleterm BM software and operates with most protocol converters for synchronous communications, the vendor said.

The software reportedly supports error-free, disk-to-disk file transfer and supports the X Modem protocol. It also permits file uploads and downloads with any asynchronous system, microcomputer or mainframe.

The product costs $395.

Telexpress, P.O. Box 317, Willingboro, N.J. 08046.

STORAGE DEVICES

■ Cipher Data Products, Inc. has announced that its 26M-byte Model 8210 tape backup system is available to support the Texas Instruments, Inc. Professional Computer.

The system is based on the vendor's Floppy Tape technology that enables tape drives to emulate the standard floppy disk interface and permits them to respond to floppy disk-like commands, according to Cipher Data.

The Model 8210-TI is priced at $1,095.

Cipher Data Products, P.O. Box 85170, 10101 Old Grove Road, San Diego, Calif. 92138.

■ Kennerman Labs has announced 10M-byte and 60M-byte streaming tape backup units for use with the IBM Personal Computer, Personal Computer XT and AT.

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macro "learn" facility that stores keystrokes.

The learn facility also is available separately as the Keymac package. Unlike other macro programs such as Borland International's Sidekey, Keymac is specifically designed for 1-2-3 applications, Fox said.

The products run on the IBM Personal Computer line and compatible systems. Quickmac requires 70K bytes of internal memory space.

Quickmac will be available in June for $99 or can be ordered now for $79. Keymac will ship in May for $40.

Fox & Geller is located at 604 Market St., Elmwood Park, N.J. 07407.

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the screen.

The word processing package, R Word, is said to include a 50,000-word spelling checker. R Word also includes a printer setup program for printer configuration. R Word reportedly can create anything from a memo to a report and offers users a menu of editing, formatting and printing functions.

Also introduced was a multiuser version of R Desk, desktop management software that was recently enhanced with an on-screen clock and cross-system file compatibility. R Desk serves as an on-screen notepad, to-do list, daily scheduler and desktop calculator.

The multiuser version of R Desk is priced at $295. Single-user R Desk is $39.95.

R Word is $895 in its multiuser version and $295 in its single-user version. R Office costs $1,295 for multiuser versions, and $495 for single-user versions.

R Systems is located at 11450 Pagemill Road, Dallas, Texas 75243.

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MICROCOMPUTERS

Continued from page 81

Each streaming tape cartridge is said to back up 10M bytes in less than four minutes. The tape units reportedly permit both image and file-by-file backup and restoration.

Communication between disk and tape is facilitated by a menu-driven program that allows the user to call up both tape and hard disk directories to back up, restore, erase, rename and print individual files, the vendor said.

The 10M-byte streamer tape backup is priced at $795; the 60M-byte model, $1,395.

Kennerman Labs, 8054 S.W. Nimbus Ave., Beaverton, Ore. 97005.

■ **Advanced Digital Information Corp. has introduced a file-addressable tape cartridge backup system for networked IBM Personal Computers.**

The Data Library tape system reportedly offers the capacity to store more than 30,000 IBM PC-DOS files and to emulate a hard disk, using all of the commands of Microsoft Corp.'s MS-DOS operating system.

The system also is said to permit users to store and retrieve data randomly without software modification.

Because it is file addressable, Data Library permits users to access data on a network, even after the network's hard disk has undergone a head crash, according to the vendor.

The Data Library interfaces with Novell, Inc. Netware software and costs $4,495.

Advanced Digital Information, P.O. Box 2996, Redmond, Wash. 98013.

■ **Priam Corp. has introduced Innerspace, a 5¼-in. add-in disk drive for the IBM Personal Computer XT.**

Designed as a replacement for the Personal Computer XT's standard 10M-byte disk, the Innerspace disk drive fits into the same space and reportedly offers either 43M bytes or 60M bytes of storage in its two versions. Both versions have an access time of approximately 30 msec.

The Innerspace unit consists of a complete add-in kit with installation software, manual and reference guide. It reportedly provides automatic defect management for data security and protects against accidental loss of data.

The 43M-byte Innerspace costs $2,195; the 60M-byte unit costs $2,595.

Priam, 20 W. Montague Expwy., San Jose, Calif. 95134.

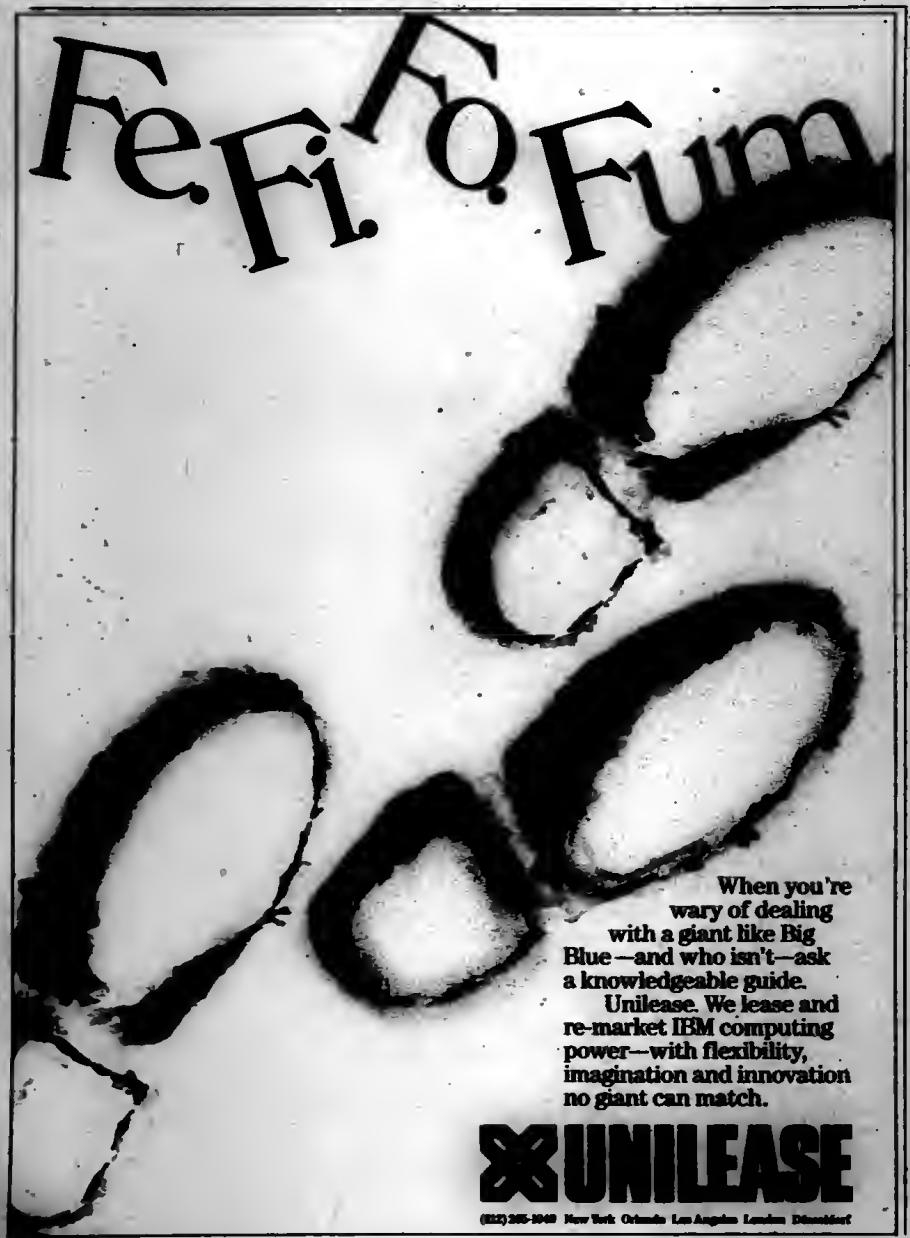
■ **Portable Computer Support Group, Inc. has announced the Chipmunk portable disk drive for use with the Tandy Corp. Models 100 and 200 laptop computers.**

The product is said to expand the computers' 32K-byte random-access memory with 368K bytes of storage per 3½-in. diskette. Users can reportedly save files on disk or call files from the disk with a single keystroke.

A diskette supplied with the disk drive includes functions that allow users to view segments of large files from a remote mainframe and directly upload or download files to and from the mainframe with a single keystroke, the vendor said.

The product costs $590.

Portable Computer Support Group, No. 207, 11035 Harry Hines Blvd., Dallas, Texas 75229.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NAME from page 47

will end up supporting.

But Compaq has staked out its turf much more clearly than did AT&T with its Unix PC, an intriguing system flung out toward the misty ranks of those who buy "next-generation" machines.

AT&T's plans for the Unix PC aren't clear — for one thing, if a full range of voice/data features is so important, why doesn't the Unix PC offer them for multiple users? For another, does the new Communications Manager add-on for the AT&T 6300 PC make that machine a fairly direct competitor of the Unix PC?

Closer to earth, the suppliers already offering personal computer/phone combos underline the need to expand the range of communications options and link them tightly to specific applications.

In one case, Zaisan, Inc. found that users wanted the ability to dial automatically a phone number displayed in IBM 3278 terminal emulation mode, noted Don Cooper, marketing vice-president at the Houston firm. Zaisan, which introduced its ES3 IBM Personal Computer-compatible system last July, has added read-only memory software to carry out the task.

Tangible benefits

But there are huge numbers of potential options — when do all the potential benefits become tangible?

For Bruce Berman, whose Boston-based Catalyst organization does political communications and fundraising, adding voice store-and-forward to a range of other telecommunications functions did the trick.

Berman bought Watson, an add-on product for the Personal Computer from Natural Microsystems Corp. of Natick, Mass., and found that the device "began to shape the way that I work."

"With one button, I can get in touch with any client," he said. Clients also can call in to pick up messages. In addition, the setup gives "closer contact with my employees who are not on-site without making them feel overmanaged," he said. "They like calling in."

He pointed out that the system can make calls by itself, sending recorded or voice-synthesized messages. Recorded messages work perfectly well in some situations, he said. "If you're delivering information to people that they want or need, they don't care."

COMMUNICATIONS

AT&T service offers up to 20% savings

By John Dix
CW Staff

Corporate users with private-line networks may be able to shave 10% to 20% off their communications bills using a recently announced AT&T service in which user networks exist in the memory of AT&T switches and links are established when and as needed.

Introduced in March [CW, March 11], AT&T's Software Defined Network (SDN) is an analog service for voice transmissions and data communications up to 9.6K bit/sec. SDN "enables users to put together a private network using AT&T switched facilities," said Joel Gross, product manager of the service. SDN is slated to be available later this month.

"Communications managers today can only manage the large sites in a network, and the hundreds and sometimes thousands of small locations go virtually unmanaged," Gross said. These small sites typically use direct-distance dialing and Wats lines because they do not have the traffic required to cost-justify a private line to tie into a corporate network, according to Gross.

"With SDN you can put almost every location on the corporate network and provide features and cost management and network management to each site," Gross said.

Targeted at business customers with at least 20 geographically dispersed corporate sites, SDN is said to provide functions similar to electronic tandem networks — where private branch exchanges are networked together using leased lines — and AT&T's Enhanced Private Switched Communications Service (EPSCS) and Common Control Switching Arrangement (CCSA) service, which are switched private-line services for large organizations.

ANALYSIS

Like these network alternatives, SDN provides for the following:

- Seven- or 10-digit private numbering plans in which all users, regardless of location, can establish a connection through the corporate network using the company's numbering plan.
- Call authorization codes that can be

See SDN page 59

- Timeplex has announced an asynchronous port module for its Link/1 facilities management system for T1 transmission/85
- Verilink has announced a channel service unit for T1 lines/86
- Uninet will jointly produce, market and support private packet-switched networks with the telecommunications division of M/A-Com/89
- Triangle Software released an enhanced version of its Netcheck CICS network management software/89

INSIDE

Voice/Data Communications/85
Software/89

Groups oppose FCC proposal for allotment

By Bryan Wilkins
CW Washington Bureau

WASHINGTON, D.C. — Two large user groups last week expressed their opposition to proposals being considered by the Federal Communications Commission to allocate customers who do not choose long-distance communications carriers among available service providers.

The International Communications Association (ICA) and the Ad Hoc Telecommunications Users Committee, which represents 30 large Fortune 100 firms, are opposing the default allocation plan that is supported by the U.S. Department of Justice [CW, April 22].

Under the current plan, customers who do not choose a long-distance carrier under equal access are defaulted to AT&T Communications. The plan being considered by the FCC would apportion these so-called default customers among AT&T's various competitors, according to the percentage of customers initially captured by each carrier. This plan has worked with success in Northwestern Bell territory and prompted the Justice Department to throw its weight behind the change in the interest of "encouraging consumer choice."

ICA last week told the FCC that while "it understands the FCC's dilemma in desiring to find a means to resolve what is in effect an inertia favoring AT&T's existing dominance, [the ICA] cannot endorse a solution which would result in the unilateral transfer of a customer from AT&T to another long-distance carrier without that user's affirmative prior approval."

ICA said the proposal blatantly contradicts the FCC's stated policy of minimum interference in the marketplace and infringes on the consumer's freedom of

See ACCESS page 58

Net wiring still an issue

DATA STREAM
John Dix
CW Senior Editor

Although many of the lower level nuts and bolts issues of local networking have been superceded in users' minds with higher-level software concerns, wiring and choice of media remain important technical and cost issues.

The options haven't changed much over the years. Twisted-pair wire, as used with telephone systems, is ubiquitous today, but it is rarely used for data communications. Coaxial cable, originally developed 50 years ago, is the most widely used data communications medium for corporatewide local networks and, more important, existing host-peripheral connections. Fiber optics is still in its infancy.

New on the scene is shielded twisted-pair wire. As flexible as telephone wire but a little more bulky, shielded twisted-pair wire can sustain higher data rates at greater distances than normal telephone wire. IBM uses two shielded twisted-pair wires in its Cabling System wiring scheme for data transport. That system also contains four regular twisted-pair wires for voice system support.

There are advantages and disadvantages with each type of wire and cable. The highest data rates, for example, can

See WIRE page 55

IBM management tools advanced but not perfect

By John Dix
CW Staff

BOSTON — "IBM is five or more years ahead of the rest of the world in software network management," according to John King, executive director of James Martin Associates, a consulting firm in Carmel, Calif.

King taught a seminar on IBM Systems Network Architecture (SNA) network management at the Network Management and Technical Control conference held here recently. In the class, King outlined IBM's recommended structure for Network Control Centers, described some of IBM's network management tools and addressed areas where those IBM products need improvement.

IBM is putting together an edifice of network management software that will resemble other software edifices it already has in place, King said. Like SNA, "we will have to live with this for the next 20 years," he said. The International Standards Organization (ISO) once looked at network management but, accord-

See IBM page 54

Stand-alone Phonemail available from Rolm

SANTA CLARA, Calif. — In back-to-back announcements, Rolm Corp. unveiled a version of its Phonemail messaging system for non-Rolm switches, and parent company IBM reported it will market the product in the U.S. and Canada.

The Rolm Phonemail voice store-and-forward system can reportedly be used with private branch exchanges manufactured by other switch vendors or with Centrex services provided by local telephone companies.

Originally designed to be integrated with Rolm's family of switches, the Phonemail version lacks some features available when integrated with Rolm CBX II systems. In particular, the stand-alone version cannot support a call-waiting light, and users have to forward their phones manually to their mailboxes instead of having incoming calls automatically routed there after four unanswered rings.

As with the integrated version, Phonemail for non-Rolm switches comes in four-, eight- or 16-channel

See ROLM page 55

KING from page 83

ing to King, abandoned the effort after two years. ISO's network reference model will borrow network management technology from IBM's architecture, the speaker predicted.

Drawing from IBM documentation, King said the mainframe manufacturer recommends a three-tiered Network Control Center as the nerve center for network management. These levels include a help desk, network operations and technical support.

According to King, the first level, the user help desk, can resolve 85% of network problems that generally involve things like making sure the user device is turned on. Operations support resolves 10% of net failures, including link and modem problems. The remaining 5% of the problems are software-related and require technical support.

IBM's network management tools revolve around centralized, host-based applications software, King said. The Network Communications Control Facility (NCCF) is the baseline application that runs on Vtam on the host. Other applications, such as the Network Problem Determination Application and the Network Logical Data Manager, run on top of NCCF.

These and other packages provide end-to-end management capabilities, if IBM or compatible modems and peripherals are used. "Modems are a very strategic IBM network management product," King said. IBM uses mainstream or in-band signaling for network management — where status data of remote equipment is intermixed with the main data stream — while most other vendors pass that data over a separate side or out-of-band channel.

Although "overpriced and underpowered," IBM modem technology will eventually dominate because of IBM's lead in software-based network management, King said. NCR Comten, Inc. already makes IBM-compatible modems.

But as advanced as IBM's host-based software management tools are, problems exist. King said IBM needs to do the following:

- Reduce network complexity, particularly when developing systems generations that define the location and type of equipment in a network. Today users have to "gen" the host and the front-end processor separately using different equipment descriptions.
- Extend connectivity of SNA host network management applications to local networks — including personal computer nets — and separate the job of network operator into separate positions for CPU room operator and network operator.
- Increase application availability by improving network routing alternatives and recovery procedures.
- Provide for nondisruptive network growth where systems can be attached to the network and be recognized as new devices without having to stop everything to do a new systems generation.

Network management is being driven today by the ever-increasing need for continual network service with acceptable response times at reasonable costs, King said. Although these goals will remain constant in the future, networks and network management systems will have to change with the times, particularly to support personal computers.

Honeywell expands Ethernet server lines

PHOENIX — Honeywell, Inc. has announced a network control server, the NCS/150, and several diskless communications servers for its Ethernet local-area network products.

Honeywell's local net products are compatible with Ethernet Version 1.0 and IEEE 802.3 standards, according to the vendor. They support the Xerox Network System protocols and Honeywell's Distributed Systems Architecture for its DPS 90, DPS 88 and DPS 8 large-scale processors, as well as its DPS 6 small systems and Micro-systems 6/10 and 6/20.

The NCS/150 is said to centralize administration of a local network and provide initial loading of operating system software. The NCS/150 supports up to 40 communications servers with or without disks. Multiple NCS/150s can be integrated into a single Honeywell Ethernet network to support a larger number of servers or to provide redundancy.

Honeywell's CS/1 series has been expanded with the diskless CS/1-X, which provides the same functions and supports the same number and types of devices as the CS/1.

Software for the CS/1-X is loaded from an NCS/150 over the network. Software for the CS/1 can be loaded from its own diskette or from an NCS/150 over the network.

Seven models have been added to the CS/100 series, four of which are diskless. Honeywell's communications servers support from four to 14 synchronous or asynchronous terminals. The disk CS/100 products can be loaded from the terminals or from the network control server over the network. The diskless CS/100 products support servers in environments where operator intervention is not practical or where a floppy disk drive is subject to contamination.

The NCS/150 communications server costs $6,195. The diskless CS/1-X, which can be configured with up to 32 ports, costs $8,095. Prices in the CS/100 series range from $3,780 to $5,670.

Honeywell can be reached at P.O. Box 8000/A-79, Phoenix, Ariz. 85066.

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VOICE/DATA COMMUNICATIONS

■ Timeplex, Inc. has announced an asynchronous port module for its Link/1 Facilities Management System for T1 transmission.

According to a vendor spokesman, the Link/1 Quad Asynchronous Module (QAM) allows Link/1 units to handle an intermix of voice and synchronous and asynchronous data. It supports up to four asynchronous ports at rates up to 19.2K bit/sec.

QAM permits a single point of control over asynchronous devices connected to Link/1 units. In hierarchical systems, network control of the asynchronous ports requires separate supervisory port control of the multiplexing devices.

Interfaces available with QAM include RS-232/CCITT V.24, RS-422/CCITT V.11, RS-423/CCITT V.10 and MIL-STD-188-144 unbalanced.

QAM costs $1,750.

Timeplex, 400 Chestnut Ridge Road, Woodcliff Lake, N.J. 07675.

■ Vanlink Corp. has announced its 3617 Link 6 CSU, a channel service unit for T1 lines.

The product reportedly monitors T1 traffic and can perform loopback signals for problem isolation and troubleshooting. A vendor spokesman said the channel service unit features single-and fault location capability, full jack access to a line and data terminal equipment (DTE) and the removal of bipolar violations incoming from the DTE.

The loopback capabilities consist

Continued on page 69

WIRE from page 53

be supported with fiber optics, but the glass strands are expensive and still hard to tap and split.

Coaxial cable — used in either broadband CATV-type applications or baseband Ethernet-type implementations — supports high data rates but is costly and inflexible.

Shielded twisted-pair wire — which is reportedly adequate for multiple megabit data support — is limited in application.

Snarling

Regardless of capability, all of these media require that buildings be rewired. This costly and disruptive fact is cited by manufacturers of modern private branch exchanges which are peddling their products as office communications hubs. "Install our PBX," they say, "and capitalize on your existing telephone wiring to support terminals and personal computers."

Still other vendors push products that enable you to send a data signal through twisted-pair wire above the frequencies used for the voice signal.

Using existing twisted-pair wiring is appealing, but care should be taken that desired error rates can be attained. Traditionally, telephone wire has been installed haphazardly, changed randomly and poorly documented.

Lines, for example, may be spliced, branched or left with stubs running nowhere that cause problems like reflection, which can wreak havoc with data communications.

Existing telephone wiring is not the answer for mainstream data communications needs. So, faced with the need to provide communications support to a growing number of data devices, the user can, among other things, try to make do with existing systems by adding point-to-point, host-to-peripheral coaxial cable links (if risers and cable trays are not already filled); take up the overflow by supporting some terminals and personal computers with the PBX; install departmental local networks and gateways to connect them to the necessary host facilities; or rip out all the existing systems and install a flexible, standardized wiring system or local network.

If the wiring mess has become intolerable, the last choice might make sense, but then the question becomes: What do you use to rewire?

Three-tiered transition

Fiber optics is probably the best bet for the long term, but it is still too early to make that kind of choice. In fact, some consultants warn that the migration to the preferable office communications medium may not be a single transition but a three-tiered transition from the systems in place today to an interim fix and finally to something like fiber optics.

Because the cost of the transition is so high, some large companies constructing new buildings are trying to cover their bases.

One firm in New York is installing an IBM Cabling System that supports terminals and personal computers with shielded twisted-pair wiring; an AT&T System 85 PBX that can use the IBM Cabling System's unshielded twisted-pair wiring for terminal support; and a coaxial cable backbone that will initially be used to connect on-premise teleconferencing facilities, but which doubtlessly can be employed otherwise in the future.

ROLM from page 53

models. Users can store personal greetings and retrieve messages from any Touch-Tone telephone.

IBM said it will adopt Phonemail as its voice messaging product and discontinue its Audio Distribution System (ADS) in the U.S. and Canada. IBM reported it will provide central service support for ADS through 1996.

Prices for the four-port Phonemail system start at $67,000.

Rolm is located at 4900 Old Ironside Drive, Santa Clara, Calif. 95054.

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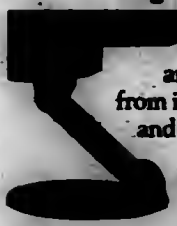

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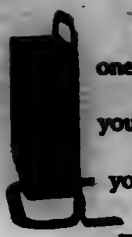

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ERICSSON

ACCESS from page 53

choice. However, it does not look optimistic that the FCC will deflect the Justice Department's latest efforts, which, not unexpectedly, have emerged from frequent misgivings voiced by MCI Communications Corp. and GTE Sprint Communications Corp. on the equity of the divestiture's allocation formula.

ICA said that while equal-access conversion plans by the former Bell operating companies may lead to added marketing costs for AT&T's competitors — which face a geographically dispersed pattern of end-office conversion to equal access — ordering carrier allocation will prompt added revenue requirements for the other common carriers far beyond their arguable short-term benefit. ICA said these added costs, if all end offices are converted at the same time as advocated by Satellite Business Systems of McLean, Va., would then be passed on in rate hikes.

Beef about allocation scheme

The ICA, which represents telecommunications users who individually spend more than $1 million annually, has a further beef about the allocation scheme. Acknowledging that large- and medium-size business users will probably already have centralized telecommunications management, the ICA maintained that "process of ordering and billing local-access lines is frequently distributed among decentralized operating units . . . and many major corporations may operate much like a collection of small businesses at the local telephone level, without benefit of a national presubscription strategy."

Ad Hoc similarly based its opposition to a mandatory allocation scheme on the fact that "[mandatory allocation] could unreasonably intrude on the decisions of business and residence customers."

The group said lesser steps can be taken to improve the participation of consumers in the presubscription process. It noted complaints levied by Allnet Communication Services, Inc. against the divested Bell operating companies that allege delays in the provisioning of service, billing and collection problems and failure to deliver service on a timely basis.

For accurate communications revved up to 2400 bps, you need an expert in the driver's seat: DataComm 2412.

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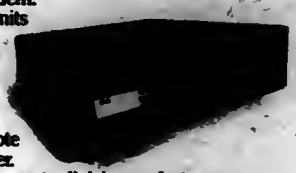

At accelerated speeds, DataComm 2412 can access packet switching networks, graphics terminals, and remote databases. It can also link minis to a mainframe computer.

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COMMUNICATIONS

SDN from page 53

used to charge departments for network use.

■ The establishment of call screening groups, where calling privileges for certain user segments can be regulated — restricting, for example, some users from making off-net calls, placing calls after 5 p.m., or making international calls.

■ Generation of reports that detail network use.

According to Gross, SDN provides these capabilities at savings of 10% to 20% when compared with electronic tandem networks and AT&T's EPSCS and CCSA services.

Users who network PBXs with leased lines might supplement these nets by using SDN to support small locations. Because customers have on-line access to their network, location support can be added, deleted or altered overnight and sometimes in as little as 15 minutes, Gross said. "You don't have to rewire anything."

SDN will initially be available from more than 600 AT&T serving offices around the country, Gross said. It is accessed through three types of communications facilities:

■ Standard SDN access, a new type of access that AT&T is asking the local exchange carriers to provide to end users. It is said to be a switched-dedicated access trunk similar to Wats; the facilities are switched but dedicated to use with SDN. Recommended data speeds supported with this type of access should not exceed 4.8K bit/sec.

■ Private-line access, procured by customers from a local carrier or through AT&T acting as the customer's agent, using voice-grade analog lines or digital facilities. Both accommodate speeds up to 9.6K bit/sec.

■ Customer-provided access, in which customers arrange access links with the carrier of their choice.

Making the choice

While accessing a switched service with a leased line seems analogous to putting the cart before the horse, choosing the type of access needed is simply a matter of finding the most cost-effective facility for each location's traffic. Small locations with low volume traffic would probably opt for SDN standard access, the most expensive type of access option, Gross said. Medium-size users might be able to cost-justify leased analog lines, which have fixed monthly rates. Large users may get the best price/performance by using T1 1.54M bit/sec digital facilities.

Once within SDN, AT&T routes the circuit according to instructions stored in the memory of its network switches. "There are no dedicated intermachine trunks," Gross explained. "The customer is being carried within a special domain within the switched network."

Beside the cost of accessing the SDN network, users are charged for the transport portion of the network from one SDN serving office to another. This charge is dependent on minutes of use, time of day and the distance between serving offices (see chart page 60).

Other network fees include a one-time, nonrecurring set-up charge of $105,000, which is payable in three installments. Additionally, there is a $1,000 access line grouping charge for each site supported up to 50 sites. The site-charge tapers off to $600 per site for 200 sites or more.

Continued from page 68

of data terminal equipment monitoring for the DTE side of a T1 line and data channel type and inband loopback capability for the network side. A 6511Y List 6 chassis fits either a 19- or 23-in. rack and can be adapted for mid- or front-chassis mounting.

The product costs $2,300.

Verilink, 1169 Barregas Ave., Sunnyvale, Calif. 94089.

■ United Telecommunications, Inc.'s Uninet, Inc. subsidiary has announced that it will jointly produce, market and support private packet-switched networks with the telecommunications division of M/A-Com, Inc.

Both companies will promote the private network offering, which is based on M/A-Com's CP-9000 Series II packet-switching equipment and Unimet's Gem4 proprietary software and hardware network products.

According to Unimet, orders for more than $40 million of Gem4/CP-9000 Series II products have already been placed. The agreement, the vendors said, combines Unimet's network operating experience with M/A-Com's technological expertise.

Unimet, 10951 Lakeview Ave., Lenexa, Kan. 66219.

SOFTWARE

■ Triangle Software Co. has released an enhanced version of its Netcheck CICS network management software. Version 2.0 is said to offer ad hoc and automatic message broadcasting, automatic attempts at reconnecting service and detailed reports of resources such as control units, lines and terminals for inventory purposes.

Netcheck 2.0, reportedly allows messages to be stored indefinitely for automatic broadcast to any group of terminals at a specified time. The product is said to allow users to specify a number of automatic attempts to reestablish service after disconnection and provide four hard-copy reports to track resource inventory.

The product runs on any DOS or OS/VS system with CICS 1.5 or higher, according to the vendor.

Netcheck 2.0 costs $8,500 for DOS systems and $12,500 for OS/VS systems.

Triangle Software, Suite 275, 4340 Stevens Creek Blvd., San Jose, Calif. 95129.

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400 Corporate Court, South Plainfield, NJ 07080

LIMIT from page 53

facilities, making it less attractive for large corporate network use," he said.

'Supplement to voice systems'

Billed as a voice and low-speed data network service, SDN is basically viewed as a "supplement to voice systems that have unpredictable peaks and valleys," according to Charles G. Abbott, a communications consultant in New York.

"Data is more controllable than voice because it can be held back, as compared with the uncontrollable, spontaneous, individually initiated voice call," Abbott said. With SDN, traffic peaks can be accommodated on an as-needed basis.

AT&T points out that SDN can be combined with its recently announced digital Accunet Switched 56 network service. "You can marry these services so it looks like a hybrid service," said Joel Gross, SDN product manager at AT&T. When used together, customers can specify that they want end-to-end digital connectivity, given that they have digital local-access facilities. When used together, the administrative functions of SDN — such as the use of authorization codes and call screening — can be applied to Accunet Switched 56.

Proposed Software Defined Network rates
(Business Day, Schedule A*)

Time Increments	Mileage Bands						
First 30 sec./additional 6 sec. increments	$.29/$.026	$.32/$.028	$.35/$.031	$.37/$.033	$.42/$.038	$.43/$.038	$.45/$.040
2 minutes	$.68	$.74	$.82	$.87	$.98	$1.00	$1.05
4 minutes	$1.20	$1.30	$1.44	$1.53	$1.68	$1.78	$1.85

per count

* Schedule A rates are the highest of the Software Defined Network (SDN) tariffs because they are end-to-end and include the cost of standard SDN local access.
Schedule B rates apply where SDN access is used on one end of a call and a leased special-access line is used on the other end. It also applies where special-access facilities are used to access the service and the switched telephone network is used to terminate the call.
Schedule C rates are the lowest tariffs and only cover the transport part of the network between AT&T SDN serving offices; customers have to procure their own local service access.
Nonbusiness day discounts include the following: Schedule A, 20%; Schedule B, 20%; and Schedule C, 20%.

The primary benefit of SDN is cost, consultants said. "SDN is a cross between a Wats line and a private line," according to Harry Newton, president of Telecom Library, a publishing and consulting firm in New York. "AT&T is trying to give users a switched network that looks like a private line." It gives users most of the functionality of private lines, but the traffic fill required to cost-justify dedicated facilities is unnecessary.

Another major benefit of the service is availability. Unlike a private line — where if the line goes down you have to wait until it is repaired — with SDN, alternate circuit paths can be established, Dittberner said.

On the dark side, Newton said, the technology behind SDN may eventually enable AT&T to do away with private lines, a proposition of which "large users are desperately afraid.

'AT&T is having difficulty'

"AT&T is having difficulty in providing private or special facility lines," Newton said. "It can't do it on a timely basis, and it can't cover its costs. AT&T's strategy is to try to get away from the price war and provide value-added services, such as SDN."

When and if the Federal Communications Commission ever deregulates AT&T — something the company pushes for regularly — it will instantly drop all private-line services, Newton contended.

"AT&T ultimately wants to get out of the private-line business," he said.

Likely motivators behind this strategy include the costs of installing dedicated facilities — costs that Newton said take too long to recover — and the imperative of maintenance; private lines require quick repair whereas switched services like SDN can bypass failed facilities.

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SYSTEMS & PERIPHERALS

IBM 1800 followers flock for support

By Donna Ashmenti
CW Staff

The IBM 1800 Data Acquisition and Control System — vintage 1964 — inspires kudos from its user base even now. A group of these users has banded together to help each other find parts and service since IBM announced its support for the venerable machine will cease in September 1986.

Of the nearly 2,000 machines built, more than 900 are still up and running, estimated Fred Ludwick, lead engineer for energy management systems at Niagara Mohawk Power Corp. in New York state and systems division manager of Common, the IBM computer users group that is addressing 1800 maintenance issues. Ludwick has two 1800 systems that he uses for acquiring data from bulk power systems for the 24,000 square miles and 3.5 million customers in the Buffalo, Syracuse and Rochester, N.Y., areas, he said.

The 1800 uses core memory, and all its peripherals were hardwired to it originally so interrupts would be vectored to the right place, Ludwick said. Ludwick has switched to IBM 3274 controllers and disk drives built for an IBM Series/1 machine, he said. The original machine had "personality wiring" customized for each user, Ludwick said.

Some users remain loyal to the 1800, despite IBM's plan to discontinue support.

IBM tried to convince 1800 users to migrate to its System/7 and then to its Series/1 minicomputers, but customers were not pleased with these arrangements, Ludwick said. The 1800 had a selector channel so users could connect any channel-selectable peripheral to it, such as large disk drives or printers, which the other machines did not offer, he said.

In addition, users of the 1800 could run batch partitions for commercial functions and run real-time partitions simultaneously, another function the Series/1 and System/7 did not offer, he added. There is no real migration path for people who have millions of lines of code written for the 1800, because programs were written in 1800-specific assembler language, he said.

Ludwick's company plans on purchasing an IBM 4381 system eventually to replace the 1800 and to add new functions, he said, because his company needs a much larger energy management system than is possible with the vintage machines.

In the meantime, Ludwick acts as an informal adoption agency to match up 1800 parts with people who need them, he said. "I've placed about a dozen," in the last two years. Every now and then he hears about one that got thrown away, and he cringes. "There is a market for the machines," he said.

Timothy Gregory, electronic research

See 1800 page 86

- Benson, Inc. unveiled a a color imaging system/82
- Applied Computer Sciences unveiled a Wang-compatible dot matrix printer/82
- Sun Microsystems added a graphics processor board and a buffer storage board to its Sun-2/160 color workstations/82

INSIDE
Turnkey Systems/82
Printers/Plotters/82
Board-Level Devices/82

Raster Technologies unveils Model One/75 graphics unit

NORTH BILLERICA, Mass. — Raster Technologies, Inc. has unveiled an entry-level version of its Model One graphics system called the Model One/75.

The Model One/75 is available in a deskside tower enclosure and was designed for electrical or mechanical computer-aided design, simulation, modeling and geophysical applications.

Features include a 19-in. monitor with a 1,280- by 1,024-pixel resolution, keyboard, data tablet and a mouse. Other features include a local debugger, command stream translator, local macro programming capabilities, local entry of graphics commands and a Help facility. The Model One/75 is software-compatible with the rest of the company's Model One product line, according to Raster Technologies.

A basic configuration costs $15,950. Display list memory costs $2,950 for 512K bytes, and a direct memory access interface costs $1,500. Shading and depth buffering firmware costs $600, the company said.

For more information, Raster Technologies is located at 9 Executive Park Drive, North Billerica, Mass. 01862.

HP introduces disk drive featuring removable media

PALO ALTO, Calif. — Hewlett-Packard Co. announced a 20.5M-byte removable media disk drive for its HP 1000 and HP 9000 computer systems.

Called the Model 7907A, the unit was designed for use in automatic testing, data logging, computer-aided engineering or security and intelligence applications and is said to be the first mid-range removable-media disk drive HP has offered. Previously, the removable media feature was only available on the company's larger, more expensive disk drives, the vendor said.

HP said the 7907A features a 45-msec average transaction time. An off-line store/restore operation can reportedly be accomplished in two to three minutes, and the unit is capable of performing 22 I/O operation/sec., the company said.

The 7907A uses an 8-in. removable media cartridge, which is reportedly suitable for rugged environments. The 7907A costs $12,500; and extra 20.5M-byte cartridges cost $215 each. The unit will be available in July.

More information is available from the HP Inquiries Manager at 1820 Embarcadero Road, Palo Alto, Calif. 94303.

Novix chip boasts more speed than Motorola 68000

By Kathleen Bolton
CW West Coast Bureau

CUPERTINO, Calif. — Novix, a five-person company based here, has announced a microprocessor that it claims can operate 10 times as fast as Motorola, Inc.'s 68000. The company said the chip contains 80% fewer components than the 68000. Called the NC4000, the unit is primarily aimed at the scientific and engineering communities where speed is a critical factor, according to John Golden, Novix's general manager.

Golden said the chip is based on a reduced instruction set that enables it to achieve internal processing speeds of roughly 8 to 10 million instructions per second (Mips). Novix will begin shipping the chip in June, with commercial quantities available by September. The chip will cost approximately $100, he said.

The NC4000 chip was designed by Novix principal Chuck Moore, who invented the Forth language in 1970. The chip's instruction set is based on 20 to 30 Forth words, which act as the chip's machine language, according to Moore.

Leo Brodie, a Novix consultant, said commercial applications for the NC4000 will include robotics, single-chip device controllers for hard and floppy disks and video displays and digital signal processing for military and computer graphics applications. Tom Chollquist, director of technical operations at Synercx International, the venture capital firm based here that financed Novix, said the chip can also be used to generate real-time graphics. The NC4000 can generate animation at 60 times a second.

Chollquist claimed, however, that to realize its design potential, the NC4000 must focus on languages other than Forth, which has roughly 20,000 users.

Moore contends his chip can operate with other languages, using an assembler or a compiler, but he admits doing so will slow the chip's processing speed to approximately 2 Mips.

Ray Duncan, president of Laboratory Microsystems in Los Angeles, which develops and markets Forth language software, said the NC4000 design is hampered by a lack of memory space and inadequate addressing capability which make it a poor vehicle for transferring the new chip idea to other languages. Duncan said that, on paper, the chip performs well, but once it is buried under the operating system and peripheral controlling devices or acts as a coprocessor with systems like the IBM Personal Computer, its speed advantage is substantially reduced.

Ken McKenzie, a Dataquest, Inc. analyst, said the chip's potential is difficult to gauge because silicon development is only 5% to 10% of a chip's success. Commercial success depends on other factors, he said, such as whether the chip is producible economically and the availability of second-sourcing potential.

Novix is located at 16500 North Tantau Ave., Cupertino, Calif. 95014.

SYSTEMS & PERIPHERALS

TURNKEY SYSTEMS

■ **Benson, Inc. has announced its Color Imaging System, which combines a Color Image Processor (CIP) unit with the company's Colorscan 800 ink-jet color plotter.**

The user connects the CIP unit to the Benson Colorscan 800 and to an IBM 5080 workstation with analog cables to plot screen images using a video sampling technique. The video sampling technique is said to allow the CIP to grab the image off the screen and transfer the pixels directly to the plotter.

If optional memory is added, the screen images are sent to the CIP in seconds, the screen is frozen for two seconds while the data is dumped into memory and the user can go back to work on the workstation, according to the vendor.

The plot is said to be complete in less than five minutes.

The CIP also adds multiplexing capability to the Colorscan 800. Up to four different workstations can share the system.

Features include selectable black/white field reversal, limited-color mode and accentuated black. The CIP formats the data necessary to drive the Colorscan 800.

The basic one- or two-user system costs $19,500 for the Colorscan 800, the CIP and the necessary cables. Additional memory of 3M bytes to 4M bytes, depending upon the workstation configuration, costs $3,000 and allows up to four users to use the system.

Benson, P.O. Box 32059, 2690 Orchard Park Way, San Jose, Calif. 95152.

PRINTERS/PLOTTERS/PERIPHERALS

■ **Applied Computer Sciences, Inc. (ACS) has released its Wang Laboratories, Inc.-compatible printer, the ACS Genicom 3404 dot matrix printer.**

Applied Computer has taken a Genicom Corp. printer and added an ACS interface unit that provides the printer with Wang OIS and VS systems compatibility, the vendor said. The ACS interface has self-test diagnostics.

The printer works at 480 char./sec. in draft mode and 100 char./sec. in near letter-quality mode, the vendor said.

Options include a color option feature for color printing, a draft-speed-only mode and a quiet version of the printer, the vendor said.

The ACS Genicom 3404 costs $4,995.

ACS, 12910 Kingsgate Way N.E., Kirkland, Wash. 98034.

BOARD-LEVEL DEVICES

■ **Innovative Computer Technology, Inc. has announced its Monitor Attachment card which plugs into the I/O slot of an IBM Series/1 processor to detect and correct problems such as machine failures and power interruptions.**

The device reportedly can warn staff of problems by sending messages through a bisynchronous adapter that will dial a modem and flash messages on the staff member's terminal screen, the vendor said. It can issue reboot messages to the processor in case of a Series/1 failure and relay the time and date to the operating system via a real-time clock with battery backup.

The system costs approximately $1,200.

Innovative Computer Technology, 30 Broad St., Denville, N.J. 07834.

■ **Raster Graphics, Inc. has announced a red-green-blue (RGB) color graphics generator board that was designed for Intel Corp. Multibus applications that require text and graphics.**

The RG-12C board provides 512-by 240-pixel resolution with four pages of memory, eight colors and a 60Hz refresh rate, the vendor said. The board is used with RGB color or black-and-white television monitors.

The board costs $695.

Raster Graphics, P.O. Box 5157, Bend, Ore. 97708.

■ **Sun Microsystems, Inc. announced a graphics processor board and a buffer storage board for its Sun-2/160 color workstation.**

The two boards are said to improve the Sun-2/160's speed in graphics-intensive applications.

The graphics processor board reportedly improves processing speed in two- and three-dimensional transformation, clipping, scaling and rendering operations. The unit enables the Sun-2/160 to draw vectors with floating-point coordinates at 1.5M pixel/sec. This, the vendor said, allows users to draw 25,000 three-dimensional vector/sec. The shade rate of three-dimensional polygons, including hidden surface removal, is 1M pixel/sec. with fill rates of up to 35M pixel/sec. Polygons are generated and processed at 1,000 pixel/sec., the vendor said.

The graphics buffer board is said to improve hidden surface removal response time. Both boards cost $5,900 each.

Sun Microsystems, 2550 Garcia Ave., Mountain View, Calif. 94043.

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1800 from page 81

assistant at TRW Corp. in California, agrees that there is a market for them. Gregory has been trained to assume the maintenance of both the 1800 hardware and software for his company.

TRW has had three 1800s since 1968, two of which are used for spacecraft testing, Gregory said. The company is planning to keep the old IBMs for the duration of the test program — into the 1990s, he said. Gregory found a spare 1800 in another part of the company and bought a surplus model from the California Gas Co., he said, so he is not really worried about getting parts.

TRW will keep its machines because there is no migration path that makes sense economically, Gregory said. The 1800 uses IBM's MPX and TSX operating systems, which were peculiar to it, he said. All the software used in the testing program was written in house, and it would be too expensive to start from scratch with another system.

"The 1800 is the last of a breed," Gregory said. It was built strictly for process control, where each device is assigned an interrupt level that cannot be changed via software, he said. "The processor sits there and waits for [an] interrupt to happen, and then it goes out and does something," he said. The closest thing to it is the IBM Series/1, he said, but software can change the interrupt level of the Series/1.

TRW's 1800s were in storage for six years during a cessation of the spacecraft testing program, Gregory said. "It took me nine months to revamp everything," he said. The machines have to be booted with a card reader, he said, something which he is trying to get around now. A lot of the circuit cards in the machine are the same as those used in IBM's 360/370 series machines, he said, but the solid logic technology cards that are particular to the 1800 will be hard to find.

Terry Littlewood, a TRW employee who oversees U.S. Air Force (USAF) projects, is responsible for 11 1800s that are located in three different sites around the country. They are used for calibrating and certificating the guidance and control systems of the USAF Minuteman fleet, Littlewood said.

Littlewood's group is putting together information needed to contract later this year with a company to build an 1800 emulation system, he said. "We'll also try to get as many spare parts as possible from IBM," he said. The main thrust of the 1800 policy will be to maintain the 1½ million lines of code in the system,

> ***"TRW will keep its [1800] machines because there is no migration path that makes sense economically."***

he said. "Rather than rewrite, we'll try to emulate the timing, instruction set, interface [and so on]," he said.

Littlewood sends his staff to be trained at a power plant in Ontario in the care and maintenance of the old system, he said. The processor is extremely reliable, Littlewood said, but he has problems with the peripherals, which, on some of his systems, are the ones that came with the systems years ago. He has teletype IBM 1053 printers, but through the Common users group, he has gotten directions for building an RS-232 interface that he has tried — unsuccessfully so far — to connect to a Texas Instruments, Inc. printer. He also still uses IBM 1810 and 2311 disk drives, he said.

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COMPUTER INDUSTRY

UCS merger hails major TRW impact

By Peter Bartolik
CW Staff

ROCKAWAY, N.J. — When a $10 million company is acquired by a $6 billion company, convention would suggest that the smaller entity is in for some big changes.

But the recent acquisition of Ultimate Computer Services, Inc. (UCS) by TRW Corp. seems to indicate more of a change for the larger company.

At UCS, a company engaged in refurbishing and reconditioning used IBM computer equipment, chief executive officer and cofounder Bob LaRocca is staying on as director of reconditioning services for TRW's Customer Service Division. In a recent interview, he said the merger into TRW essentially chops three years off of his five-year plan for national expansion and "saves us the aggravation of going public."

At TRW, according to Industry Services Director John Harnett, the merger will enable the service giant to establish a regional network of UCS refurbishing centers. It also provides TRW with UCS' cadre of experienced field engineers with large IBM mainframe experience who can seed TRW's existing field service organization and create a new business opportunity for the third-party service company.

UCS, soon to move its headquarters from Denville, N.J., to Parsippany, N.J., operates two refurbishing and storage facilities, one here and the other in Bensenville, Ill. According to LaRocca, the Chicago and New York-New Jersey hubs probably account for 50% of the movement in used IBM computers. Harnett said plans call for additional facilities to be opened this year and next year in markets that represent concentrations of dealers and lessors.

Literally founded in a basement garage

See ULTIMATE page 80

CEO predicts MSA's future

Acquisitions, sales, competition addressed

By John Desmond
CW Staff

NEW ORLEANS — Management Science of America, Inc.'s (MSA) Chairman and Chief Executive Officer John Imlay was interviewed here at the recent Interact meeting attended by 3,200 MSA users.

In sum, Imlay said MSA will be acquiring more software firms to move into new vertical markets; that the domestic division of its subsidiary, Peachtree Software, Inc., will be sold within weeks; that if he had a chance to do it over, he still would have bought the Peachtree micro software company; and that MSA is bracing itself for IBM's entry into the applications software arena.

Imlay commented on the following topics:

How MSA will become a billion-dollar company: "We've obtained a great deal of capital and now have $85 million, which is earmarked to move into different areas of

Imlay

software. You will see us in the future moving to other vertical markets. We want to wrap our financial cross-industry general ledger and payroll systems around specific industry systems."

How MSA can keep pace with Cullinet Software, Inc.: Figures from the respective companies show that MSA is growing at a 20% annual rate, while Cullinet is growing at a 50% quarterly rate. "Cullinet is in the data base or systems software area in a dramatic way. They've done an excellent job. That particular point in the

See IMLAY page 76

TI admits profit plunge, layoffs

By Clinton Wilder
CW Staff

DALLAS — Texas Instruments, Inc. became one of the hardest hit companies in the current high-technology slump with its recent announcement of an additional 1,000 layoffs and an 88.6% plunge in first-quarter profits.

TI President J. Fred Bucy surprised most industry analysts when he told shareholders at the company's annual meeting that first-quarter earnings totaled just $9.1 million, or 37 cents per share. The company earned $79.8 million, or $3.32 per share, in the first quarter of 1984. Rev-

See TI page 75

Tax reform big business

By Mitch Betts
CW Washington Bureau

WASHINGTON, D.C. — Robert Mattson, IBM's director of taxes, was not a popular fellow at a recent business conference on tax reform here. Amid a roomful of tax lobbyists who had united to win accelerated depreciation schedules in the first rush of the Reagan era, Mattson said those benefits should be weakened so that business income tax rates can be sharply reduced.

Afterward, Mattson faced a host of questions from the audience. It was a scene that illustrated the uncharacteristic

See TAXES page 80

■ A Japanese researcher said he found it hard to believe that the fifth-generation project poses any threat to U.S. industry/68

■ Storage Technology announced a four-day workweek for some production personnel, layoffs at its printer division and a Securities and Exchange Commission investigation/71

■ Boston's version of a computer trade center may still open early next year, but it won't bear much resemblance to the original concept/74

Industry projections show familiar pattern of decline

INDUSTRY INSIGHT
Peter Bartolik
CW Senior Editor

About six months ago, semiconductor industry observers and participants were saying business would pick up again after the end of the year. A couple of months later, they were saying wait until the second half of this year. Now some are saying to wait until next year.

Two months ago, computer equipment vendors and industry watchers were saying business would be off in the first three months of the year, and the broad consensus was that a short-term downturn was materializing. But over the past two months, consensus has shifted to the opinion that the first half of the year will be bleak, followed by a rebound in the second half.

Over the past few weeks, bad news has been followed by bad news. The bad news initially centered on the minicomputer industry but has now spread far and wide. Although there have been isolated incidents of good news, the trend seems to be toward greater disappointments, as witnessed by the financial results of such firms as IBM, Control Data Corp., Computervision Corp., Wang Laboratories, Inc. and Apple Computer, Inc. More recently, Digital Equipment Corp. hinted at short-term revenue pressure, and Data General Corp. said profits for the year will be flat.

In general, the stock markets have reacted stoically to the flood of bad news. Stocks have dipped, but there has been no bloodbath on Wall St., apparently because stock prices have floated down gradually in anticipation of short-term setbacks. But the greater reason for the mellow reaction seems to be faith in the projections of IBM.

IBM admits problem

In coming as close as it ever will to admitting a mistake, IBM implied that its greatest problem, aside from the strength of the U.S. dollar, was a "wait-and-see" attitude on the part of large mainframe customers who wanted to find out what the Sierra CPUs mean to older products.

IBM said in no uncertain terms that it expects the second half of the year to make up for the first quarter and for the second quarter that seems to be going down the tubes.

That pretty much sums up the outlook that the leading semiconductor companies projected about six months ago. But a number of factors have aggravated and extended the chip industry's problems: excess capacity, reluctance by customers to resume ordering at the prehump pace and the realization that the ironclad law of supply and demand dictates price cuts in times of oversupply.

The chip vendors' prime customers are the computer equipment manufacturers. If chips are not being sold, that can only mean that equipment vendors are faced with excess capacity, customer reluctance to resume ordering at the prehump pace and the looming reality of the law of supply and demand. Even mighty IBM will have to ship at an incredible rate in the second half of the year to make up for the disappointments of the first half. And if IBM turns out to be not so mighty after all, the bloodbath in the industry will begin.

Japan's FGCS Project: Fire behind the smoke

OUTSIDE LINES
John McWilliams

Since the Japanese Fifth-Generation Computer Systems (FGCS) Project was initiated in April 1982, American opinion has seemed divided between those who view the project and its goals as "a lot of smoke" and those who see a scheme designed to make Japan the "dominant industrial power in the world" by the late 1990s.

The people at the Institute for New Generation Computer Technology (Icot), the organization charged with quarterbacking the FGCS Project, perceive the project in quite a different light. According to Yoshihisa Ogawa, chief of Icot's Research Planning Section, the FGCS Project is a "national project" aimed at developing "basic technologies" that will enable the realization of innovative "knowledge processing" systems for use in the advanced information society of the 1990s.

Since the FGCS Project, now entering its second stage, is proceeding as planned and producing the anticipated results, it can hardly be considered a lot of smoke. And as for the cries of Japanese world industrial hegemony being raised in certain quarters, Ogawa said he found it extremely hard to believe that the 50 researchers at Icot, and the 200 or so additional personnel at other participating corporate and national research laboratories, pose much of a threat to American industry.

Any advantages the Japanese might have hoped to gain by getting the jump on the rest of the world in creating a "knowledge industry" and the tools necessary to capitalize on it seem unlikely to materialize now that a number of fifth-generation computer-related projects have also been started in the U.S. and Europe. There are two such projects under way in the U.S. — the Department of Defense Advanced Research Projects Agency's Strategic Computing and Survivability Project, begun in 1984, and a private-sector project begun in 1983 by the Microelectronics and Computer Technology Corp. European fifth-generation projects include Great Britain's Advanced Information Technology Project and others being studied in France and West Germany.

Rather than feeling threatened by these other fifth-generation projects, Icot welcomes them. "We have been actively promoting international cooperation in the development of [FGCS] technology all along," Ogawa said.

As testimony to the "openness" of the FGCS Project, Icot has sent a number of researchers and specialists to the U.S. and Europe each year since the start of the project to give talks at conferences and symposia. Icot has also invited, on average, eight experts from various fields and countries to Icot every year for about a month each to take an active part in the research and development work being done there.

The FGCS Project is an ambitious, forward-looking 10-year national project sponsored and supported by Japan's Ministry of International Trade and Industry and implemented by Icot. Its stated goals are the development of a non-Von Neumann computer architecture with ultra-high-speed parallel processing functions as a basis for a knowledge-information processing system with symbolic inference capabilities, large-scale knowledge bases and advanced human interfaces.

The project has been designed to be carried out in three stages: a three-year initial stage (1982-1984), a four-year intermediate stage (1985-1988) and a three-year final stage (1989-1991).

The initial stage saw the successful completion of research into various parallel inference schemes for an inference subsystem; the development of a parallel-type relational data base machine called Delta as part of the knowledge base subsystem; the establishment of specifications for basic software systems; and the development of a sequential inference machine, its programming and operating systems and ESP, a sequential logic programming language designed for use in future software development.

The project has now entered the intermediate stage. During the next four years, the fruits of the initial stage of the project will be used to determine the algorithms and basic architecture necessary to develop the inference and knowledge base subsystems that will form the core of the fifth-generation computer system.

The final three-year stage of the project will be devoted to integrating the various hardware and software components to achieve a working prototype of the envisioned fifth-generation computer system.

McWilliams is managing director of The Word Shop, Ltd., a Yokohama, Japan-based translation company specializing in texts in the fields of computers, data communications and robotics.

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COMPUTER INDUSTRY

Fortune Systems cuts staff, reorganizes management

REDWOOD CITY, Calif. — Citing the need for strong downsizing, Fortune Systems Corp. recently laid off 20% of its work force and reorganized its top-level management positions.

The manufacturer of AT&T Unix-based office automation equipment said it expects a first-quarter revenue decline of 20% to 30% from $15.1 million in the first quarter of 1984, according to a spokesman. Fortune Systems reported revenue of $70.2 million for the year.

The layoff of 100 of the firm's approximately 510 employees took place at all levels of the company except engineering, a spokesman said. "The goal of a profitable 1985 requires strong downsizing early in the year to lower the break-even point," said Fortune Systems President and Chief Executive Officer James S. Campbell.

Under the reorganization, Campbell has assumed responsibility for marketing and sales activities in his current position. Senior Vice-President Robert J. Rachel moved from marketing to corporate development, and James Ferentz was promoted from vice-president of manufacturing to senior vice-president of operations.

Intel posts profits slump

SANTA CLARA, Calif. — Intel Corp. recently reported that first-quarter profits slumped to $10.8 million, or 9 cents per share, from year-earlier profits of $60.2 million, or 43 cents per share.

Earlier this year, the company said it was anticipating even lower sales and might not post any profit for the quarter.

Revenue for the quarter was $375.2 million, up slightly from $371.5 million a year earlier. Compared with the fourth quarter of 1984, revenue was down 10% and profits were down more than 80%; however, the first quarter was better than Intel had projected earlier this year, when the company said sales could be down 25% from the fourth quarter (CW, March 4).

With the semiconductor industry in a sales slump, Intel laid off 900 workers and closed two plants following the announcement of fourth-quarter results, which were down significantly from those of the third quarter. At the company's annual shareholders meeting recently, Intel Chairman Gordon Moore compared the industry downturn to the oil crisis of the mid-1970s.

Announcing the first-quarter results, Intel President Andrew S. Grove said, "While we don't see any real improvement yet, we feel that we have reached bottom. We expect orders to improve as customers' inventories decline to levels that will trigger reordering."

CAI chief resigns after 17 years; firm to relocate headquarters

BOULDER, Colo. — Computer Automation, Inc. (CAI) recently announced the resignation of its founder and the relocation of its corporate headquarters from here to Irvine, Calif.

David H. Methvin, CAI's founder, president and chief executive officer, resigned April 1 after 17 years with the organization, citing the company's eight straight losing quarters. George Pratt, a company board member for 14 years, assumed the positions of chairman and chief executive officer.

Pratt announced April 2 that CAI will consolidate its operations at the Irvine, Calif., site of its minicomputer division before the end of May. Pratt said the move represents an effort to stem the tide of CAI's operating losses over the past two years, including a $2.4 million loss for the quarter ended Dec. 31.

Pratt also announced that CAI will retain an investment banking firm to assist in recovery efforts, which may include the sale of one of its operations. CAI manufactures minis, micros, distributed DP systems and automatic test equipment for users and OEMs.

Ungermann-Bass' sales down 23%

SANTA CLARA, Calif. — Ungermann-Bass, Inc. reported a 23% decline in first-quarter sales, compared with the fourth quarter of 1984, and a net loss of $514,000, or 3 cents per share.

The supplier of local-area network systems said revenue for the three months ended March 31 was $11.9 million, compared with $15.5 million for the quarter ended Dec. 31. The figure represented a slight increase from $10.8 million in the first quarter of 1984.

Ungermann-Bass' first-quarter loss compared with a $954,000, or 6 cents per share, profit in the same quarter a year ago. Fourth-quarter 1984 profits were $2 million, or 12 cents per share.

COMPUTER INDUSTRY

STC shortens workweek, undergoes SEC examination

LOUISVILLE, Colo. — Storage Technology Corp. (STC) recently announced that, effective May 3, it will adopt a four-day workweek for portions of its manufacturing operations here.

The company also announced that the Securities and Exchange Commission (SEC) is investigating STC's securities offerings, financial reports and books and records dating back to 1981.

The company said the shortened workweek and planned layoff of 160 people at its printer operations in Palm Bay, Fla., were due to a slowdown in the computer industry and STC's reorganization status. Ryal R. Poppa, chairman and chief executive officer, said, "There is a general slowdown that is affecting many companies in the computer industry, and in Storage Technology's case this slowdown is compounded by the company's being reorganized under Chapter 11 of the [Federal Bankruptcy Act]."

Poppa said that under normal circumstances the company would have been able to avoid shortening the workweek, but due to the Chapter 11 situation it must keep manufacturing in line with the current level of business. The company filed for protection from its creditors Oct. 31 of last year.

The company said the shortened workweek does not apply to field service, sales, marketing, systems engineering and support groups.

The SEC investigation reportedly is to determine whether the company followed SEC rules and acceptable accounting procedures in keeping its books, issuing securities and filing financial reports.

Xicor cuts work force, hours

MILPITAS, Calif. — Citing continuing weak business conditions in the electronics industry, Xicor, Inc. announced the layoff of 130 employees and the institution of a four-day workweek for most of its remaining workers.

The semiconductor manufacturer said its 1985 growth rate will be less than it anticipated in 1984, when it significantly increased its work force, facilities, equipment and inventories.

The layoffs reduce the work force from 740 to 610 employees. Only Xicor sales and marketing employees will continue to work a five-day week.

Xicor President Raphael Klein said the cost-saving measures will not affect the company's product development, order delivery and factory upgrading schedules. Xicor expects to break even on an estimated $9 million in revenue for the first quarter of 1985.

Industry reports chip orders, shipments increased in March

SAN JOSE, Calif. — The battered semiconductor industry received some good news in March, as both order and shipment rates for semiconductors increased from February figures. But it was not enough to turn around the industry's weak first-quarter showing.

The Semiconductor Industry Association (SIA) reported that March billings from U.S.-, Japan- and Europe-based semiconductor manufacturers rose 21.4% from February figures to $903.9 million. The total $2.4 billion shipment figure for the quarter, however, was down 6% from the first quarter of 1984 and down 18% from the quarter ended Dec. 31.

March orders boosted the average monthly figure for the quarter to $691.1 million, up 4.4% from the average at the end of February.

Predicting continuing slowness in the computer market and excess semiconductor inventories, SIA President Thomas D. Hinkelman forecast a second-quarter semiconductor order rate of $2.5 billion to $2.6 billion, compared with $2.57 billion in the second quarter of 1984. He estimated that the yearly shipment figure for 1985 would total $10.4 billion, off approximately 10% from 1984.

"[The semiconductor industry] recovery continues to be hampered by weak orders for computers and office equipment, whose manufacturers consume about 40% of all semiconductors in the U.S. market," Hinkelman said.

The SIA figures are based on manufacturers who participate in the World Semiconductor Trade Statistics program.

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Original plans dashed for Boscom high-tech center

By Gladeen Winter
CW Staff

BOSTON — The much-ballyhooed computer trade mart called Boscom may still open here in January 1986, but it will bear little resemblance to the size or purpose envisioned by its founders some years ago. Even the name Boscom may go the way of most of the other ambitious plans for the waterfront high-tech center.

Boscom lives on as one tenant of the World Trade Center of Boston, a business center that plans to offer one-stop access to banking, commerce, shipping and other services to American and international firms doing business overseas. The center received the official blessing of the World Trade Center Association at the association's quarterly meeting in Tokyo April 2.

The new hope for the center is a bittersweet feeling for Boscom, which originally was to occupy the entire site (then 500,000 square feet) with computer vendor displays and demonstrations — an Infomart of the East Coast.

But when two years of marketing resulted in only a handful of leases to high-tech vendors, underwriters FMR Corp. of Boston decided on a different tack. FMR included the project in a joint venture with several other local real estate interests in September 1984 that became part of the World Trade Center. Boscom will use 25% of the center's floor space.

Boscom and its nine computer industry tenants have been on hold since then, with 50% of its 200,000 square feet within the trade center leased. Now with a clearly defined scope and purpose, Boscom representatives hope to woo companies that did not bite in the first round.

Although marketing representatives were able to sell the concept to IBM, Xerox Corp., Lotus Development Corp., McCormack and Dodge Corp., Nynex Corp. and several smaller companies, they barely dented the list of 250 top industry vendors contacted.

"Trying to educate the industry that a computer trade center made sense involved a lot of time and marketing dollars," said Margaret Abe, Boscom's project manager and only remaining employee from pre-World Trade Center days. "It was hard to convince large, successful companies to do something different, and smaller companies weren't planning as far in advance as Boscom because the industry is so volatile."

The perception of competition with Dallas' Infomart and, to a lesser extent, San Francisco's Datamart did not help, either. "Infomart was the first, and some companies only wanted to try one market center as a test," Abe said. "A lot of people thought if anyone was going to be successful, [Infomart developer] Trammell Crow would be. And many companies already had sales offices in Boston, whereas Dallas was more of an untapped market."

Boscom representatives will now try to downplay the Infomart competition and emphasize the advantages of an international business center. Abe led a delegation of four Boscom officials to California's Silicon Valley earlier this month, approaching several of the same firms that were cold the first time around.

"With the World Trade [Center] aspect, it's different, which will help," Abe said. "And we've realized we're not in competition with each other. I think there is plenty of room for one computer mart in San Francisco, Dallas and Boston."

But any success may inevitably be compared to the original vision of Boscom, which many viewed as a can't-miss proposition in the heart of one of the world's major computer technology centers.

"In the brochure, we still refer to it as Boscom," said World Trade Center of Boston spokeswoman Kim Whittaker. "But to be perfectly honest, I don't know whether the name will be kept."

Sorbus to offer STC service

FRAZER, Pa. — Third-party maintenance provider Sorbus, Inc. announced recently it will provide maintenance to users of Storage Technology Corp. (STC) tape and disk drives and printers.

Sorbus, the former service division of Management Assistance, Inc. that was sold to Bell Atlantic Corp., said it will initially offer on-site agreements to STC users in 12 metropolitan markets: Los Angeles, Denver, Dallas, Houston, Chicago, Detroit, St. Louis, Atlanta, Boston, New York, Philadelphia and Washington, D.C.

Ronald A. Wallace, president of Sorbus, said the company has received a number of inquiries about service for products manufactured by STC, which has been operating under Chapter 11 of the Federal Bankruptcy Act since last fall.

"It makes good marketing sense to offer STC customers the opportunity for single-source service for both the peripherals and the IBM mainframes to which most of the STC drives and printers are attached," Wallace said.

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3Com Corp. reported that revenue for the third quarter ended Feb. 28 increased 129% to $10.3 million from $4.5 million in the same quarter last year. Profits were $860,000, or 6 cents per share, compared with $500,000, or 4 cents per share, in the comparable period one year earlier.

■

Measurex Corp. announced profits for its first quarter ended March 3 of $4 million, or 44 cents per share, compared with $2.2 million, or 25 cents per share, in the like quarter last year. Revenue was $44 million, a 22% increase over $36.1 million earned in last year's first quarter.

■

Systematics, Inc. reported earnings for the third quarter ended Feb. 28 of $2.22 million, or 20 cents per share, compared with $1.4 million, or 13 cents per share, in the same quarter last year. Revenue was $24.4 million, compared with $20.6 million in the prior year's quarter.

■

Evans & Sutherland Computer Corp. announced revenue for the 1984 fiscal year was $70.1 million, a 16% increase over 1983 revenue of $60.6 million. Profits were $7.3 million, or 83 cents per share, down from $10.8 million, or $1.21 per share for fiscal 1983.

Revenue and profits for the fourth quarter of 1984 were, respectively, $20.2 million and $1.8 million, or 20 cents per share, compared with $17.6 million and $3.6 million, or 40 cents per share, for last year's quarter.

■

Software AG Systems, Inc. reported revenue for the third quarter ended Feb. 28 was $12 million, compared with $10.5 million in the like quarter last year. Profits were $1.3 million, or 22 cents per share, compared with $1.7 million, or 27 cents per share, for the same period of the previous year.

■

Tektronix, Inc. announced profits for the third quarter ended March 2 of $26.8 million, or $1.36 per share, compared with $25.7 million, or $1.34 per share, in the comparable period last year. Revenue was $416.3 million, compared with $402.4 million in the previous year's quarter.

■

On-Line Software International, Inc. announcid profits of $360,000, or 10 cents per share, for the third quarter ended Feb. 28, compared with a net loss of $241,000, or 6 cents per share, for its third quarter one year ago.

■

Donnelley, Inc. reported profits for the fourth quarter ended Dec. 28 of $202,000, or 5 cents per share, compared with a loss of $5.7 million, or 74 cents per share, for the corresponding period in the prior year. Revenue was $5.9 million, compared with $162,000 in the like quarter one year earlier.

■

Science Management Corp. announced revisions to its 1984 results because of a reallocation of tax benefits between continuing and discontinued operations.

The net losses for the quarter ended Dec. 31 and for the year remain as previously reported, but the continuing and discontinued operations components are revised. Income from continuing operations for the fourth quarter was revised from $101,000, or 7 cents per share, to $634,000, or 34 cents per share.

The loss from discontinued operations for the fourth quarter was increased from $1.05 million to $1.55 million, while the loss from the discontinued operations for the year was revised upward from $2.13 million to $2.37 million. The estimated loss on the disposal of the software systems division, included in the loss from discontinued operation for both the fourth quarter and the year, is now $1.3 million instead of $913,000.

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IBM Presents "Christopher Columbus," The Untold Story, May 19 and 20, 8PM ET on CBS.

TI from page 67

enue dropped 3.8% to $1.29 billion from $1.34 billion in the same period a year ago.

Although the company said both its computer- and noncomputer-related businesses were slumping, semiconductor industry analysts said TI's downturn reflected its major stake in the hard-hit memory chip market.

TI is a leader in production of memory chips such as the 64K- and 256K-byte products, which have experienced a greater decline in demand than the market for microprocessor chips.

TI officials painted a dim picture for the rest of this year. Bucy predicted a 15% drop in semiconductor demand this year, and other TI officials said domestic markets would drop 19%. Both figures are more pessimistic than recent prognostications by analysts and the Semiconductor Industry Association.

"More so than any other major semiconductor supplier, TI has a decided tilt to generic memory chips," said A. A. LaFountain III, president of LaFountain Research in Bay Head, N.J. "That factor more than anything else leads them to portray the market in such gloomy terms. It's a realistic prediction for their product mix."

TI's layoff announcement was the latest in a series of bad news for company employees. The company reduced its work force by 2,000 in December, then announced in February that the temporarily shortened workweek at its semiconductor manufacturing facilities will be continued through the first half of this year.

Company officials cited a continuation of the inventory backlog that has plagued the industry as the reason for additional layoffs.

IMLAY from page 67

field is growing at a 50% rate, and they're capturing their share of the market. As they get into applications, I think they'll find it a bit different. The need to deal with the end user is a bit different."

On Cullinet's strategy of relying on a data base product: "They're a little bit closer to the fire than we are. If IBM [microcodes software] and comes out with an effective data base package that can compete well with Cullinet, it could bode trouble, just as [Storage Technology Corp.] was in trouble when IBM came out with a disk. Whether IBM clones its machines is still a debatable issue."

On MSA's future strategy in the micro software area: "We're emphasizing workstation software — packages that can be used in a workstation environment and are dedicated to the corporate workstation. We will layer all our systems under Information Expert [MSA's fourth-generation productivity tool] so they can dispense information up and down [from a host] to the microcomputer workstation."

On the domestic division of Peachtree, not yet sold: "We've sold Eduware and Designware to [Encyclopaedia Britannica, Inc.]. We sold our international operation and the micro distribution division. Those went very smoothly. On the Peachtree side, which is word processing and accounting systems, we have had many, many negotiations. Some people turned out not to have money. We hope to have it wrapped up within a couple of weeks." (Imlay would not comment on to whom the division may be sold.)

With the chance, what he would have done differently at MSA: "You're never really happy. If you were, you'd become complacent. But we probably would have gone after more acquisitions more quickly than we have in the past. We probably would have grown the company a little bit faster than we did. Basically, I'm very satisfied."

On Peachtree: "If I had to do it over again . . . I would have done it. At the proper time, it seemed like a good thing to do. I guess we were the first [company] to announce our intentions to get out [of the microcomputer software market]. Since then, we've seen a lot more leave the fold. The market went bad.

"It's very difficult to manage the price deterioration that took place, to manage the piracy. It turned into a merchandising business. We were competing for racks and shelf space. That's not our business. What's the gambler's song — 'You've got to know when to hold and know when to fold up.'"

Strengths and weaknesses of MSA vs. Cullinet; Cincom Systems, Inc.; Hogan Systems, Inc.; and Walker Interactive Products, Inc.: "Our strengths are in our people, our customer base, our technology. We feel we can compete with anyone.

"But the one you didn't ask about, and the one you should ask about, is IBM. We think we're four years away from [it], and we'll be ready for [it], with great strength in our customer base. The concern is not so much with the independents — not to say they are not worthy competitors — but in being ready for IBM when [it gets] in the business."

On the role of stand-alone application vendors: "A full-service vendor has a great advantage. But there are specialty companies that still have a niche. They'll be very healthy, $20 million companies in the future."

On MSA's emphasis on Information Expert, first announced last fall: "We're conservative in our policies in that we like to have a product tested and working and deliverable [before its announcement]. The R&D has gone on for four or five years. It's here now, and we can sell it. When you talk about futures, sometimes vaporware appears. Last year, we [told] the users it was coming, and the first people began to use it."

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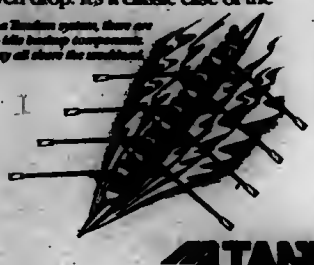

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TAXES from page 67

split that the U.S. Department of the Treasury's tax reform proposal has created in the usually close-knit community of business lobbyists.

The Treasury Department's tax reform proposal would eliminate most business tax breaks — including accelerated depreciation and the investment tax credit — in return for cutting the corporate tax rate from 46% to 33%. Many in the business community are lobbying the department to make changes in the plan before it emerges in final form from the White House in mid-May.

But at the conference, held by the Institute for Research on the Economics of Taxation (Iret), speakers said some firms are lobbying hardest for retention of accelerated depreciation and other capital formation incentives, while others are lobbying hardest for a cut in the tax rate.

The conflict occurs because the tax reform plan is intended to be revenue-neutral in the corporate sector, as retaining corporate tax breaks (such as accelerated depreciation) requires a higher tax rate to pay for them, according to Iret President Norman B. Ture.

It is this trade-off that has split the business lobbyists into two main coalitions. IBM, for example, is part of the Coalition to Reduce High Effective Tax Rates. Members of this group are willing to sacrifice accelerated depreciation in order to reduce their relatively high tax rates.

IBM's Mattson said a host of special tax breaks that distort business decision making must be abolished so that corporate tax rates can be reduced. "Rates are first. We've got to bring them down," he said.

Opposing coalition

In the other camp are capital-intensive firms that give top priority to retaining the capital formation provisions of present law. This coalition includes the U.S. Chamber of Commerce, the National Association of Manufacturers, AT&T, GTE Corp., Honeywell, Inc., Chrysler Corp., Ford Motor Co., Exxon Corp. and Continental Airlines Corp.

In a recent letter to Treasury Secretary James A. Baker, the latter group argued that repealing the tax breaks would hurt business investments by raising the cost of capital, thus hampering economic recovery and U.S. competitiveness in world markets.

"I think it's inevitable that the business community is going to be deeply divided [on major tax reform]," observed John M. Albertine, a prominent Washington lobbyist and president of the American Business Conference, Inc.

The Treasury Department reportedly is considering retention of some tax incentives, such as a modified depreciation schedule, to woo more business support for tax reform. "A few squeaky wheels need to be greased," commented Rep. James R. Jones (D-Okla.).

Sen. Phil Gramm (R-Texas) advised the audience to lobby for those changes now, because it will be difficult to make major changes once a bill emerges from the White House. Subsequent efforts to win tax breaks will be derided by the public as special interest lobbying, he said.

ULTIMATE from page 67

12 years ago, UCS grew to $10 million in revenue last year and currently ships out about 1,000 IBM computers a month after reconditioning or refurbishing, LaRocca said. When dealers and lessors move a piece of equipment from one user to another, it generally requires refitting of various features and, in many cases, repair as well.

It recently began offering maintenance of Storage Technology Corp. equipment and plans at some point to become involved with Digital Equipment Corp. computers.

The company is also involved in equipment removal and reinstallations. LaRocca said he hopes to increase site-to-site involvement, from the current 25% to 40% range, to about 75%. UCS also warehouses equipment and optional features, enabling lessors and dealers to hold inventories of machines and options and to fill specific orders from stock.

UCS customers

Although its primary customer base is most of the 280 members of the Computer Dealers & Lessors Association, UCS also provides similar services in varying degrees to about 60 large end-user clients. UCS has accumulated a large stockpile of cables, and LaRocca said that with large data center moves, "the odds are that 90% of the cables in the floor [of the old site] will be the wrong size [for the new site]."

The firm sells its ability to turn over the equipment requirements of its customers rapidly. "By the time someone could get a quote from IBM [for refurbishing], we've done it and had the equipment installed for six months," LaRocca said.

A large part of business in recent months has been power-cycle conversions of European-manufactured IBM equipment being shipped to the U.S. to take advantage of the imbalance in currency exchange rates, according to LaRocca.

UCS had planned eventually to open refurbishing centers in four or five other metropolitan areas. "TRW is financing us to do that," LaRocca explained. Aside from the undisclosed financial terms of "an offer I couldn't refuse," LaRocca said the greatest change for him has been adapting to a large corporate environment.

"Things move a little bit slower than I'm used to, but that makes me think things out a little more than I might have done before," he said.

TRW deal attractive

LaRocca said four or five equipment manufacturers contacted him about establishing business relationships, but he said he was not convinced of their long-term commitments. He found the TRW offer attractive because he was convinced TRW would establish a presence in IBM equipment maintenance, and he saw an opportunity to set the tone for that presence and move UCS personnel into key TRW positions.

For TRW, Harnett explained, the deal provides expertise in large mainframe equipment that their Customer Service Division had not previously developed.

The UCS field service engineers that were absorbed into the TRW field organization will provide an opening into large data centers, he added.

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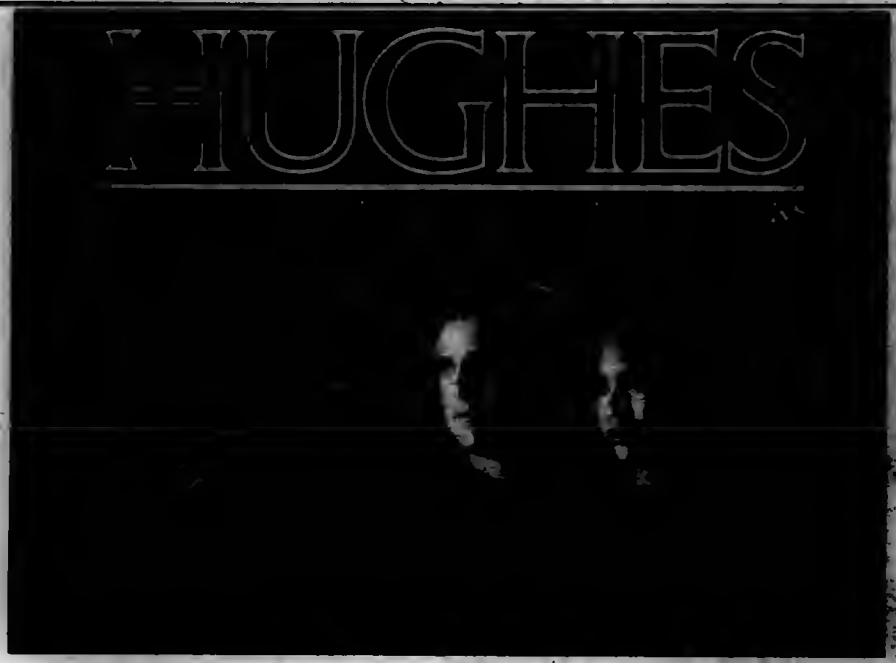

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ACP/TPF

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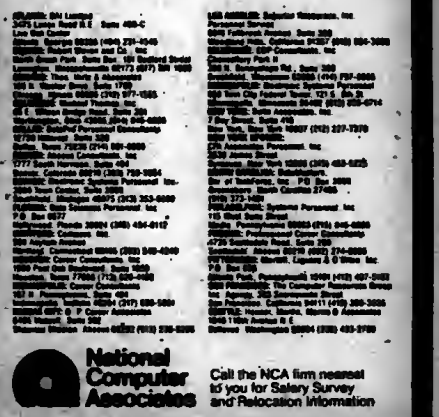

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Attn: Personnel Manager
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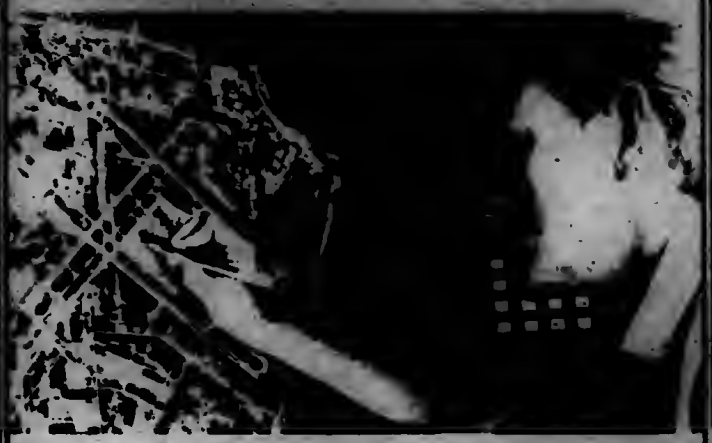

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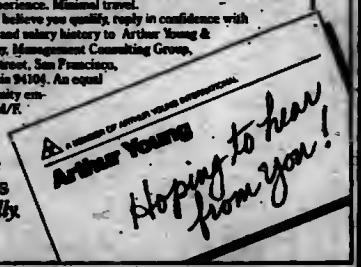

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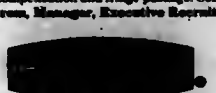

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Request for Proposal No. 1[illegible], due 3:00 p.m., Thursday May 23, 1985, for the acquisition of training services in the design and operating system for the management of the Mississippi Society of State's Corporate and UCC records.

Request for Proposal No. 1[illegible], due 3:00 p.m., Thursday May 23, 1985, for the acquisition of a turnkey IBM/PC-based hardware to address the scheduling and control inventory management needs of the University of Medical Center Department of Facility Maintenance.

Request for Proposal No. 1[illegible], due 3:00 p.m., Thursday May 16, 1985, for a Data-mail processing system for the Mississippi State Treasury Department.

Request for Proposal No. 1[illegible], due 3:00 p.m., Thursday May 30, 1985, for the acquisition of microcomputer word processing equipment for the Jones County Junior College's administrative offices and their word processing instructional laboratories, respectively.

Detailed specifications may be obtained from the CDPA office. The CDPA reserves the right to reject any and all bids and proposals and to waive informalities.

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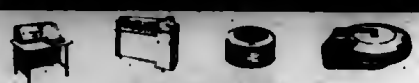

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4381	0.55	1
4331-1	0.25	0.5 to 1
4331-11	0.38	1 to 2
4331-2	0.59	1 to 4
4341-9	0.52	1 to 4
4381-9	0.78	2 to 4
4341-10	0.75	2 to 4
4841-1	0.88	2 to 4
4341-11	1.1	2 to 8
4381-4	1.15	2 to 12
3031 -	1.2	2 to 8
4381-5	1.45	2 to 12
4341-2	1.5	2 to 16
4341-12	1.85	2 to 16
3031AP	2.0	2 to 8
4381-1	2.1	4 to 16
3082	2.5	2 to 8
4381-2	2.7	4 to 32
30836	2.9	4 to 16
4385CX	3.3	8 to 32

SYSTEMS	MIPS (Millions of Instructions Per Second)	MEGABYTES
4381-3	4.0	
3083C	4.2	
3083H	4.3	
3083X	4.4	
3083JP	5.0	
3083E		
3083J		
3083B		
3084X		16 to 32
3084Q		16 to 32
4381-4		16 to 64
4381-5		16 to 64
4381-6		16 to 64
4381-7	15.5	16 to 64
3090	26.6	32 to 96
4381-2	28.7	32 to 128
30936	29.4	64 to 192
4385SCX	32.9	128 to 384

*First installation 1987

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470		
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		64
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5870	18 to 64	
5880	32 to 128	

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AS/6050	9	8 to 48
AS/6060	11.2	16 to 64
AS/6070	16.2	16 to 64
AS/6080	32	16 to 64
†AS/XL-60	28	32 to 256
†AS/XL-80	50	64 to 256

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The above information is intended as a guideline for computer users to relative computer system instruction cycle times. All data have been derived from published documentation and represent reasonable estimates of average MIPS ratings. However, Randolph is not responsible for the accuracy of the MIPS data. Cycle times will vary based upon hardware/software configurations, and system manufacturers continuously modify computer models as design improvements in hardware and software arise.

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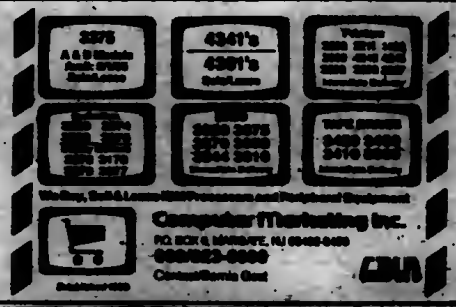

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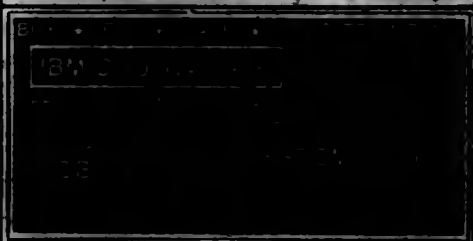

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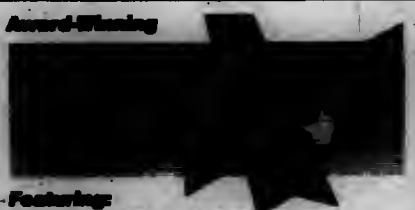

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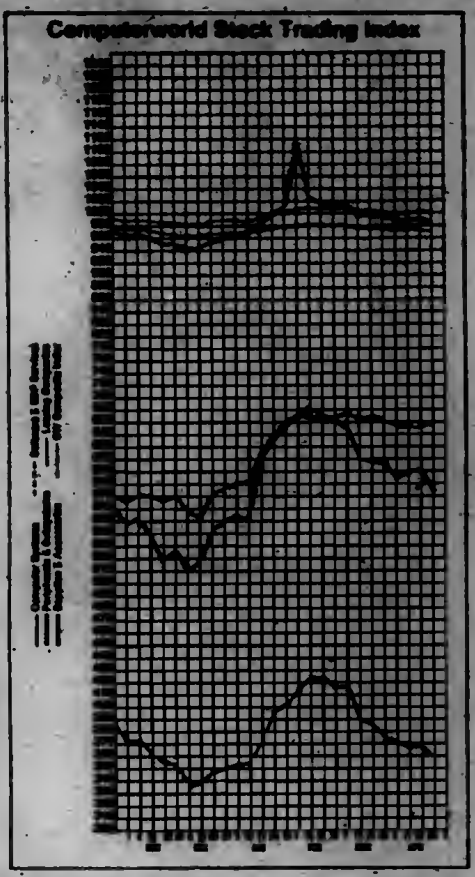

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